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Jerry Hansen
AFCEE/EST

**Work Plan for an
Engineering Evaluation/Cost Analysis
In Support of the Intrinsic Remediation
(Natural Attenuation) Option**



**Plattsburgh Air Force Base
Plattsburgh, New York**

Prepared For

**Air Force Center for Environmental Excellence
Brooks Air Force Base
San Antonio, Texas**

and

**Plattsburgh Air Force Base
Plattsburgh, New York**

November 1993

AQ MOF-03-0492

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SECTION 1

INTRODUCTION

This work plan was prepared by Engineering-Science, Inc. (ES) and presents the scope of work required for the collection of data necessary to conduct an engineering evaluation/cost analysis (EE/CA) for remediation of groundwater contaminated with fuel hydrocarbons and chlorinated solvents at the former Fire Training Area (FT-002) at Plattsburgh Air Force Base (AFB), Plattsburgh, New York. Several remedial options will be evaluated during the EE/CA, including removal of remaining free-phase petroleum hydrocarbons not extracted during an earlier removal action (E.C. Jordan Co., 1990); groundwater extraction, treatment, and reinjection (i.e., pump and treat); air sparging; installation of a reactive wall; and *in situ* contaminant attenuation through natural processes (intrinsic remediation option) coupled with long-term monitoring. All hydrogeological and groundwater chemical data necessary to evaluate the various remedial options will be collected under this program; however, this work plan is oriented toward the collection of hydrogeological data to be used as input into the Bioplume II® groundwater model in support of the natural attenuation remedial option (intrinsic remediation) coupled with long-term monitoring for restoration of groundwater contaminated with fuel-related compounds, chlorinated solvents, and limited free-phase petroleum hydrocarbons.

As part of the EE/CA, the Bioplume II® modeling effort has four primary objectives:

- Determine the fate and transport of fuel-related hydrocarbon compounds and chlorinated solvents dissolved in groundwater at the site;
- Assess the potential for, and rate of, degradation of both fuel hydrocarbons and chlorinated solvents by indigenous microorganisms;
- Assess the possible risk to potential downgradient receptors; and
- Provide technical support for the evaluation and potential selection of the natural attenuation remedial option.

This work plan was developed based on several discussions among representatives from the Air Force Center for Environmental Excellence (AFCEE), Plattsburgh AFB, Applied Research Associates (ARA), the U.S. Environmental Protection Agency (USEPA), and ES, and on a review of existing site characterization data. The EE/CA evaluation and the Bioplume II® modeling effort each involve completion of several tasks, which are described in the following sections.

All necessary field work will follow the health and safety procedures presented in the program Health and Safety Plan for Bioplume II® Modeling Initiative (ES, 1993) and the site-specific addendum to the program Health and Safety Plan, which has been submitted to USEPA. This work plan was prepared to coordinate the activities of all agencies involved in the EE/CA, including ES, AFCEE, Plattsburgh AFB, ARA, and USEPA.

1.1 SCOPE OF CURRENT WORK PLAN

The ultimate objective of the work described herein is to provide an EE/CA for remediation of groundwater contamination at the former Fire Training Area (FT-002) at Plattsburgh AFB, New York. However, this project is part of a larger, broad-based initiative being conducted by AFCEE in conjunction with USEPA and ES to document natural contaminant biodegradation by indigenous microorganisms and resulting attenuation of fuel hydrocarbons and possibly chlorinated solvents dissolved in groundwater, and to model such degradation using the Bioplume II® numerical groundwater model. For this reason, the work described in this work plan is directed toward the collection of data in support of this initiative, as well as data required to provide a 30-percent design of a groundwater remediation system, should intrinsic remediation not prove to be a viable remedial option at this facility. This work plan describes the specific site characterization activities which will be performed in support of the EE/CA and the Bioplume II® modeling effort.

Proposed site characterization activities include cone penetrometer testing and soil and groundwater sampling. Cone penetrometer testing, soil and groundwater sampling, and analytical protocols are described herein. Existing site-specific data and data collected during the supplemental site characterization activities described herein will be used as input for the Bioplume II® model. Detailed information on the unsaturated and saturated materials present at the site is available from several sources, including the draft FT-002 soil remedial investigation report prepared by ABB Environmental Services (ABB, 1992), the phase II groundwater remedial investigation report for the site prepared by ABB and URS Consultants, Inc. (ABB/URS, 1993), and the draft FT-002 groundwater operable unit feasibility study report prepared by URS (1993). These reports were used to develop an understanding of the potential nature and extent of contamination at the site, to develop a preliminary conceptual fate and transport model, and to supplement model input data.

This work effort will also represent an evolution in the intrinsic remediation program because proposed site characterization and modeling efforts will attempt to quantify the potential for co-metabolism of dissolved fuel-related components and chlorinated solvents at the site. Sensitivity analyses will be conducted for the parameters which are known (or suspected) to have the greatest influence on the results of the Bioplume II® model, and where possible, the model will be calibrated to historical site data. Upon completion of the Bioplume II® modeling effort, ES will provide technical assistance during regulatory negotiations to support the intrinsic remediation/long-term monitoring remedial option, if the results of the modeling indicate that this approach is appropriate. If it is shown that intrinsic remediation is not

the most appropriate remedial option, ES will recommend the most appropriate groundwater remedial technology based on available data.

This work plan consists of six sections, including this introduction. Section 2 presents the existing site-specific data and a conceptual model for the site. Section 3 describes the proposed sampling strategy and procedures to be used for the collection of additional site characterization data. Section 4 describes the remedial option evaluation procedure and EE/CA report format. Section 5 describes the quality assurance/quality control (QA/QC) measures to be used during this project. Section 6 contains the references used in preparing this document. There are two appendices to this work plan. Appendix A contains a listing of the containers, preservatives, packaging, and shipping requirements for necessary site characterization samples. Appendix B contains a summary of existing soil and groundwater analytical data from previous field investigation work.

1.2 SITE BACKGROUND

Plattsburgh AFB is located in northeastern New York State and is bordered on the north by the City of Plattsburgh, on the south and west by the Town of Plattsburgh, and on the east by Lake Champlain. The base covers 4,795 acres, 3,365 of which are federally owned and controlled by the military, and 1,430 of which are registered as easement tracts (ABB/URS, 1993). Site FT-002 is approximately 700 feet wide and 800 feet long. The FT-002 site, formerly designated FT-001, is located approximately equidistant (500 feet) between the Plattsburgh AFB runway to the east and the base boundary to the west. Site FT-002 is located south of domestic waste landfill LF-022 and north of domestic waste/spent munitions landfill LF-023 (Figures 1.1 and 1.2). Previous remedial investigation studies indicated that these sites are not contributing an appreciable mass of contamination to groundwater affected by FT-002 operations; both source areas (LF-022 and LF-023) are to be covered under separate remedial action implementation programs to minimize exposure risks from the surface soil pathway.

Site FT-002 is situated in a limited-access area. Access from the east is restricted by the controlled-access areas of the active runway to the east; access from the west is somewhat less restricted, although the area is bounded by a 4-foot-high, three-wire fence. Access from the north and south is generally limited by the LF-022 and LF-023 areas, respectively. Figure 1.1 is a regional location map showing the position of FT-002 relative to Plattsburgh AFB and the surrounding area. Figure 1.2 is a site map showing FT-002 and the immediately adjacent area in detail.

Site FT-002 was used to train base fire-fighting personnel from the mid- to late-1950s until the site was permanently closed to fire training activities on May 22, 1989. During fire training exercises, fires were ignited in four fire training pits located in the FT-002 area. The pits usually were saturated with water before approximately 75 to 100 gallons of fuel was added and ignited. The fuel for the fire pits consisted mainly of waste jet fuel (JP-4) mixed with waste oil. Solvents and other chemicals were sometimes mixed with the fuel. A single training exercise usually consisted of four consecutive cycles of igniting and extinguishing fires in the training pits. Prior to the 1980s, a maximum of 2,000 gallons of fuel was burned each day during weekly fire training exercises (Radian, 1985). Previous site investigations have suggested training

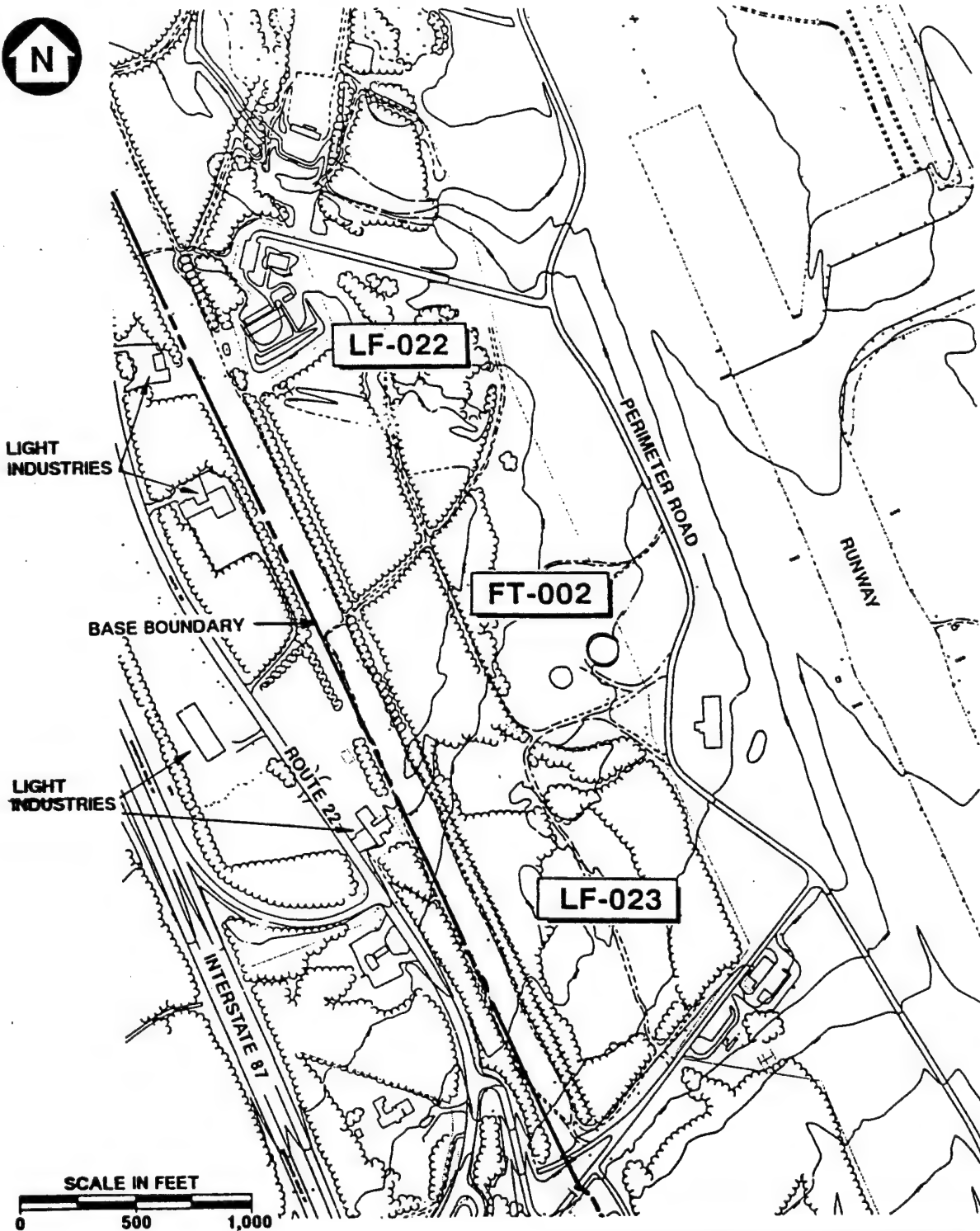


FIGURE 1.2

FT-002 SITE MAP

EE/CA
Plattsburgh AFB, New York

ENGINEERING-SCIENCE, INC.

Denver, Colorado

Source: ABB/URS, 1993.

activities may also have been conducted in an area north and west of the pits (ABB/URS, 1993).

Several site investigations have been conducted since the spring of 1984 to support the characterization of potential soil and groundwater contamination. A preliminary assessment of the site was completed in 1985 (Radian, 1985); a site inspection (E.C. Jordan, Co., 1989a) and a phase I remedial investigation were completed in 1988 (E.C. Jordan, Co., 1990); a free-product recovery pilot test was conducted in 1989 (E.C. Jordan, Co., 1989b, 1991a); a drainage flow study was completed in 1990 (E.C. Jordan Co., 1991b); a soil remedial investigation was completed in 1991 (ABB, 1992); and a phase II groundwater remedial investigation was completed in 1991 (ABB/URS, 1993).

The results of these investigations indicate that the soil and groundwater associated with each fire training pit is contaminated with JP-4-related compounds and chlorinated solvents. The former storage tank and oil/water separator that served Pits 2 and 3 have also been identified as potential sources of soil and groundwater contamination. Free-phase product is also present in the capillary fringe and possibly floating on top of the groundwater table in some areas (e.g., downgradient of Pit 1, Pit 4, and the oil/water separator).

A previous removal action at the FT-002 site was conducted in 1989 to pump free-phase product located downgradient of Pit 1 (E.C. Jordan, 1990). Both active and passive product recovery systems were pilot tested. Data from the pilot tests demonstrated that product removal rates could not be predicted for any particular groundwater product pumping rate (E.C. Jordan, 1990). It is suspected that free-phase product is still present within the capillary fringe and floating on the groundwater table immediately underlying the FT-002 site.

The site-specific data and conceptual model presented in Section 2 are based on a review the results of the aforementioned investigations. A synopsis of site characterization activities conducted to date is provided in Chapter 1 of the phase II remedial investigation report prepared by ABB/URS (1993).

SECTION 2

DATA REVIEW AND CONCEPTUAL MODEL DEVELOPMENT

Existing site-specific data were used to develop a conceptual model of the groundwater flow system and the nature and extent of contamination at FT-002. This conceptual model will allow collection of additional data in an efficient manner to fill data gaps, to support the Bioplume II® modeling effort, and to evaluate potential remediation technologies. Sections 2.1 and 2.2 present a synopsis of available site data. Section 2.3 presents the preliminary conceptual groundwater flow and solute transport model which was developed based on these data.

2.1 DATA REVIEW

The reports cited in Section 1.2 and available regional data were reviewed, and relevant portions of these data are summarized in the following sections.

2.1.1 Site Geology and Hydrogeology

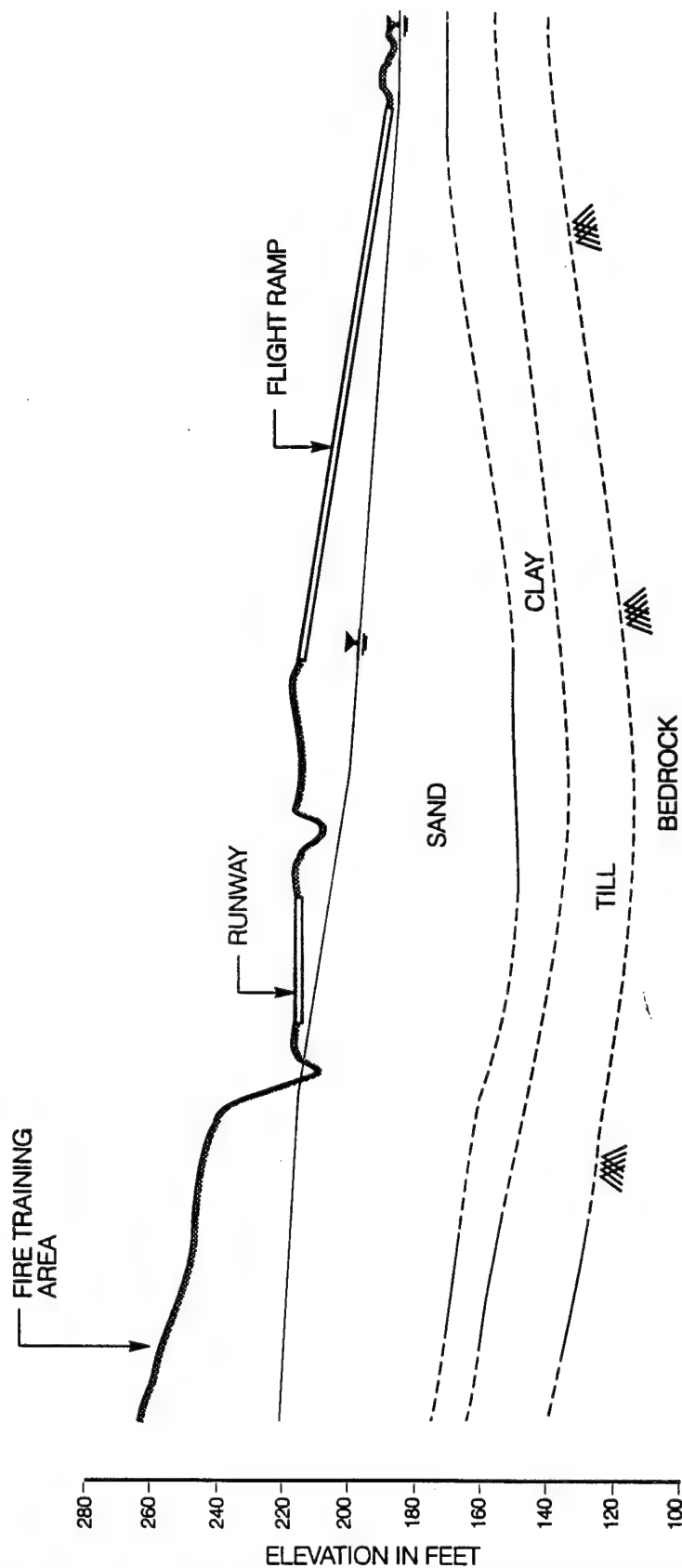
The surface topography of Plattsburgh AFB near FT-002 slopes gently eastward toward Lake Champlain and slightly southeastward toward the Saranac and Salmon Rivers, which border the base to the north and south, respectively. Both of these rivers affect the shallow groundwater flow system at Plattsburgh AFB.

The topography in the vicinity of FT-002 was significantly altered by earth moving activities necessary to construct the nearby runway and flightline. The redistribution of soil during these activities created a steep hill just east of FT-002 and an ephemeral gully, which facilitates onsite drainage, between the runway and flightline. These surface modifications may affect groundwater flow and plume migration patterns at the site. The ephemeral gully contains water of probable groundwater origin which discharges into a stream west of the runway during periods of high groundwater levels; this stream flows south through the Weapons Storage Area within the boundaries of Plattsburgh AFB before discharging into the Salmon River.

Four distinct geologic units underlie the site: sand, clay, till, and bedrock. The sand unit generally extends from ground surface up to 90 feet below ground surface (bgs) in the vicinity of FT-002. A 7-foot-thick clay unit has been identified on the eastern side of the site; the thickness of the clay on the western side of FT-002 has not been determined. A 30- to 40-foot thick clay/till unit is also present from 80 to 105 feet bgs in the vicinity of FT-002. Bedrock is located approximately 120 feet bgs.

Three distinct hydrogeologic units have been identified beneath the FT-002 area. Figure 2.1 is a schematic of the subsurface environment at FT-002. Several seismic

NORTHWEST
Z



Notes: 1) Bedrock surface inferred from seismic results.

2) Groundwater level 9/91 - 11/91

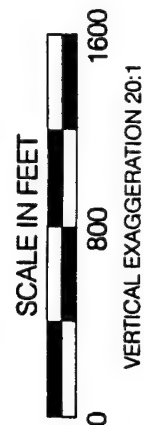


FIGURE 2.1

**SCHEMATIC OF
HYDROGEOLOGIC UNITS
BENEATH FT-002**

EE/CA

Plattsburgh AFB, New York

ENGINEERING-SCIENCE, INC.

Denver, Colorado

refraction surveys, a soil boring program, and a cone penetrometer survey have been completed at the site to provide data necessary to characterize the subsurface environment (ABB/URS, 1993). These investigations indicate that the uppermost aquifer is unconfined and is comprised of well-sorted, medium- to fine-grained sand which extends from the surface to approximately 90 feet bgs on the west side of FT-002 and to approximately 20 feet bgs on the east side of the flightline. The depth to groundwater varies from 0 feet on the eastern side of the site to 35 feet bgs on the western side of the site.

The average horizontal hydraulic gradient along the flow lines emanating from FT-002 to 8,200 feet downgradient is approximately 0.010 foot/foot (ft/ft) toward the southeast (generally toward Lake Champlain). However, northern and southern components of flow also exist because of the effects of the Saranac and Salmon Rivers, respectively. Hydraulic conductivity for the shallow unconfined aquifer measured during *in situ* permeability testing for the FT-002 site ranged from 2.55 feet/day to 13.89 feet/day [9.0×10^{-4} to 4.9×10^{-3} centimeters/second (cm/sec)], with a site average of 11.6 feet/day (Table 2.1). Using an average hydraulic gradient of 0.010 ft/ft (southeastward), and accounting for the variability in porosity in the upper aquifer (30 to 40 percent), the average groundwater seepage velocity in the FT-002 area is calculated to be between 0.29 foot/day and 0.38 foot/day in the southeastward direction. Vertical hydraulic gradients, which vary depending upon location within the aquifer, also are present at the site (Table 2.2). This variability in vertical gradient suggests possible local influences, such as the presence of groundwater surface discharge points and vertical subsurface heterogeneity (ABB/URS, 1993).

Several series of groundwater level (potentiometric) measurements have been taken during different years and seasons. These data suggest that there is minimal seasonal variation in groundwater flow direction at the site. Previous groundwater modeling activities conducted for the phase II remedial investigation used 1991 winter groundwater elevations to calibrate the model. Table 2.3 presents these data, and Figure 2.2 shows typical groundwater potentiometric contour lines.

Immediately underlying the shallow saturated zone is a series of aquitards and aquicludes consisting of silts, clays, and glacial tills which effectively isolate the shallow saturated zone from the deeper, confined bedrock aquifer. The combined thickness of the clay, silt, and till aquiclude has been estimated to be up to 60 feet. Although *in situ* permeability tests were not conducted on these confining materials, hydraulic conductivity values for this unit may be on the order of 10^{-7} cm/sec (2.8×10^{-4} foot/day) (Freeze and Cherry, 1979). Laboratory permeability studies on these materials support the conclusion that little or no appreciable hydrologic connection exists between the upper and lower (bedrock) aquifers, even after sustained exposure of the shallow aquifer to low concentrations of organic solvents such as trichloroethene (TCE) and trans-1,2-dichloroethene (1,2-DCE) (ABB/URS, 1993).

Underlying the confined silt and clay aquiclude is a bedrock aquifer. Although data on this lower aquifer were not collected during recent remedial investigations, early hydrogeologic studies in the region concluded that the bedrock aquifer consists of sandstone and crystalline rock to the west of Plattsburgh AFB and carbonate rock beneath Plattsburgh AFB (Giese and Hobba, 1970). This deep aquifer is confined by

**Table 2.1. Hydraulic Conductivity by Depth
EE/CA Workplan, Plattsburgh AFB**

Well ID#	Test #	Depth(ft)	K (cm/sec)	K(avg)	K(ft/dy)	K(avg)	Unit
MW-02-004	1	35-45	0.0043	0.004	12.18	11.19	sand
	2	35-45	0.0036		10.2		sand
MW-02-019	1	9-24	0.038	0.038	107.7	107.7	sand
	2	9-24	0.038		107.7		sand
MW-02-020	1	30-40	0.0039	0.0039	11.05	11.05	sand
	2	30-40	0.0039		11.05		sand
MW-02-021	1	7-17	0.00013	0.0001	11.05	0.397	sand
	2	7-17	0.00015		4.25		sand
MW-02-022	1	20-30	0.00014	0.0001	0.397	0.397	sand
	2	20-30	0.00014		0.397		sand
MW-02-030	1	46-55	0.001	0.0011	2.83	2.98	sand
	2	46-55	0.0011		3.12		sand
MW-02-033	1	81-91	0.00007	0.0000	0.198	0.2	silty sand/clay interface
	2	81-91	0.000068		0.193		silty sand/clay interface
	3	81-91	0.000074		0.21		silty sand/clay interface
MW-02-035	1	74-84	0.00019	0.0002	0.539	0.282	silty sand/clay interface
	2	74-84	0.00022		0.624		silty sand/clay interface
MW-02-036	1	28-43	0.009	0.0088	25.51	24.8	sand
	2	28-43	0.0085		24.09		sand
MW-02-037	1	25-35	0.003	0.0028	8.5	7.8	sand
	2	25-35	0.0025		7.09		sand
MW-02-038	1	45-55	0.00057	0.0005	1.62	1.59	sand
	2	45-55	0.00055		1.56		sand
MW-02-039	1	40-50	0.0037	0.004	10.49	11.2	sand
	2	40-50	0.0042		11.9		sand
MW-02-040	1	20-30	0.0034	0.0035	9.64	9.78	sand
	2	20-30	0.0034		9.64		sand
MW-02-041	1	35-45	0.0026	0.0027	7.37	7.51	sand
	2	35-45	0.0027		7.65		sand
MW-02-042	1	52-62	0.0006	0.0006	1.7	1.7	sand
	2	52-62	0.0006		1.7		sand
MW-02-043	1	15-25	0.00038	0.0003	1.08	1.08	sand
	2	15-25	0.00038		1.08		sand
MW-02-044	1	19-29	0.0011	0.0012	3.12	3.26	sand
	2	19-29	0.0012		3.4		sand
MW-02-045	1	13-24	0.00048	0.0004	1.36	1.39	silty sand/clay interface
	2	13-24	0.0005		1.42		silty sand/clay interface
MW-02-046	1	36-46	0.0068	0.0062	19.27	17.67	silty sand/clay interface
	2	36-46	0.0075		21.26		silty sand/clay interface
	3	36-46	0.0044		12.47		silty sand/clay interface
MW-02-047	1	26-36	0.0065	0.0063	18.42	17.71	sand
	2	26-36	0.006		17		sand
MW-02-048	1	6-21	0.0067	0.0061	18.99	17.29	silty sand/clay interface
	2	6-21	0.0055		15.59		silty sand/clay interface
MW-02-049	1	26-36	0.0004	0.0004	1.13	1.21	sand
	2	26-36	0.00045		1.28		sand
MW-04-001	1	6-11	0.00013	0.0001	0.368	0.368	sand
	2	6-11	0.00013		0.368		sand
MW-11-009	1	24-34	0.002	0.0024	5.67	6.8	sand
	2	24-34	0.0028		7.94		sand
MW-13-002	1	15-25	0.00069	0.0006	1.96	1.96	silty sand/clay interface
	2	15-25	0.00069		1.96		silty sand/clay interface
MW-16-001	1	10-20	0.012	0.012	34.01	34.01	sand
	2	10-20	0.012		34.01		sand
Overall average			0.0041		11.62		

**Table 2.2. Vertical Hydraulic Gradients
EE/CA Workplan, Plattsburgh AFB**

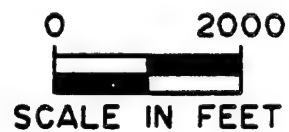
Well ID#	Depth (ft)	Vertical Hydraulic Gradient (ft/ft)		
		1/19/89	10/91	11/19/91
MW-02-021	179.6	NA	0.0066	0.013
MW-02-022	154.5			
MW-02-019	211.7	-0.152	-0.152	-0.152
MW-02-020	192.6	-0.013	-0.0064	-0.006
MW-02-030	177			
MW-02-037	197.9	NA	-0.005	-0.005
MW-02-038	177.8			
MW-04-006	186.4	NA	0.0073	NA
MW-02-023	159			
MW-02-040	184.4	NA	-0.133	0.112
MW-02-041	170.1	NA	0.028	0.011
MW-02-042	152.3			

Source: ABB/URS, 1993

**Table 2.3. Potentiometric Measurements Used
in Previous Groundwater Modeling Efforts**

Well ID#	Coordinates		MSL (ft)
	East (ft)	North (ft)	
MW-02-004	721997	1700173	217.5
MW-02-009	722238	1700897	217.6
MW-02-022	723497	1698381	187.3
MW-02-026	721429	1700757	218.9
MW-02-030	722809	1700173	213.3
MW-04-001	726018	1695517	179.4
MW-04-002	727638	1694950	163.2
MW-04-003	727537	1696283	166.3
MW-04-004	727094	1697345	174.9
MW-04-005	726453	1698997	189.1
MW-04-006	725097	1698724	190.9
MW-11-002	729438	1698348	146.8
MW-11-009	728811	1698193	156.6
MW-13-002	724729	1695762	171.2
MW-13-003	724308	1695344	168.9
MW-13-004	724351	1693198	147.1
MW-13-005	723495	1694742	152.3
MW-16-001	725474	1701900	202.4
MW-21-001	720969	1704131	209.5
MW-21-003	721399	1704613	195.1
MW-22-001	721676	1702094	219.3
MW-22-002	721967	1701673	218.6
MW-22-004	720758	1701269	228.2
MW-22-006	721198	1702160	219.8
MW-23-001	722724	1699319	211.8
MW-23-004	721656	1699883	217.8
MW-23-005	721870	1699370	215.5
MW-23-010	722208	1698564	210.1
PZ13S	730135	1705500	159.2
PZ12S	728755	1701324	170.4
PZ2S	726130	1702584	197.8
PZ3S	720682	1701868	232.9
PZ11S	728299	1699570	168.6
MW-17-005	727817	1698347	169.2
C	727331	1698454	175.8
MW-05-003	727251	1699445	183.9
MW-06-001	726426	1700080	193.1
PZ8S	728691	1692547	152.7
MW-07-003	728356	1691506	149.7
MW-07-004	727879	1691666	153.3
PZ7S	726303	1694521	174
PZ4S	721290	1695294	176.6
PZ6S	725282	1691585	165.1

Source: ABB/URS, 1993



the overlying clay and till layers, although there is some evidence that upward vertical gradients may cause groundwater in the lower, confined aquifer to leak upward into the shallow, unconfined aquifer.

2.1.2 Soil Quality

Subsurface soil samples were collected during previous investigations to evaluate the nature and extent of contamination in the subsurface. Sampling continued outward from the center of each area until fuel-related contamination was not detected in the composite samples. Fuel-related compounds and solvents are the primary contaminants at FT-002. During training activities, the soil beneath the pits became saturated with fuels and solvents, and the contaminants migrated downward. Because the fuel/solvent mixture is lighter than water, the downward migration of the contaminants was halted at the groundwater table. Trapped free-phase product, consisting primarily of jet fuel (JP-4) with small amounts of TCE and 1,2-DCE, slowly dissolves into the groundwater, becoming a continuing source of groundwater contamination.

Analyses of subsurface soil samples suggest a general contaminant distribution pattern. Below the pits, concentrations of fuel-related compounds [e.g., petroleum hydrocarbons (PHCs) and polynuclear aromatic hydrocarbons (PAHs)] are seen generally to increase with depth, reaching their highest levels near the groundwater table. Within the zone of groundwater table fluctuation, soil contamination has spread laterally. This lateral spread is likely attributable to the physical and chemical properties of the contaminants, and the resistance to further vertical migration due to the increased moisture content in the soil pores, first in the capillary fringe, and then in the saturated zone. This zone is likely limited to within 5 feet of the seasonally low groundwater table level.

Chemical constituents, including volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) were detected in subsurface soils within and adjacent to the FT-002 site. The primary VOCs found within the subsurface soils at FT-002 are the solvents TCE and DCE and the fuel-related compounds benzene, toluene, ethylbenzene, and xylenes (BTEX). The primary SVOCs detected in subsurface soils are naphthalene, 2-methylnaphthalene, and four phenolics (i.e., phenol, 2-methylphenol, 4-methylphenol, and 2,4-dimethylphenol). Typically, VOC contamination is found several feet below the ground surface rather than in surface soils. Figure 2.3 is a schematic of the lateral extent of soil contamination at FT-002. Appendix B contains analytical data from previous soil investigations.

2.1.3 Groundwater Quality and Chemistry

Groundwater at FT-002 contains a plume of dissolved-phase fuel-related compounds and chlorinated solvents. These plumes originate at FT-002 and extend downgradient toward the runway and taxiway to the east. Based on the distribution of contaminant concentrations, the dissolved-phase plume can be separated into an inner zone called the core plume and an outer, peripheral area. Both the core and peripheral areas of the plume are limited to the shallow, unconfined aquifer at the site. Previous investigations at FT-002 (ABB/URS, 1993) divided the contaminant plume into two zones based on contaminant distribution. For the purposes of the EE/CA, the plume present near FT-002 has been divided into two components based on concentration of

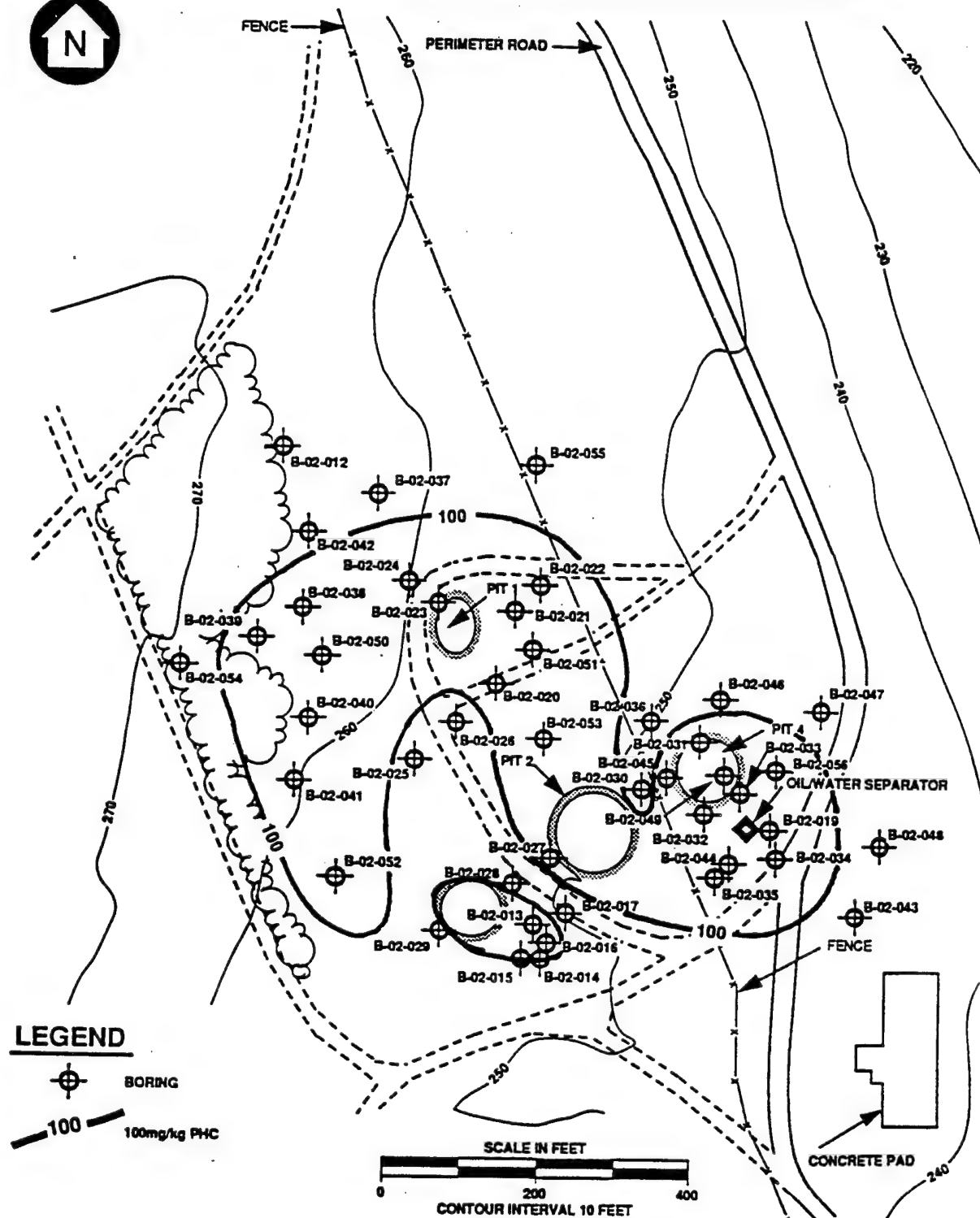


FIGURE 2.3

EXTENT OF LATERAL SOIL CONTAMINATION

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contaminants: the core, which is generally defined by wells that have VOC concentrations greater than 1,000 micrograms per liter ($\mu\text{g/L}$), and the periphery of the core plume, which is defined by downgradient wells with a VOC concentration less than 1,000 $\mu\text{g/L}$. These zones are referred to as the core plume and the periphery plume, and are schematically illustrated in Figure 2.4. These two zones are discussed in the following sections.

A total of 49 groundwater monitoring wells were installed during previous site investigations. Data from eight additional groundwater monitoring wells, which are located in other sites, are also used to delineate the FT-002 groundwater plume. Figures 2.5a and b show the location of the groundwater monitoring wells within and outside of the FT-002 plume, respectively. Several of these wells contained free product during previous site investigations.

HydroPunch® groundwater samples were also collected in 1990 to evaluate the presence of VOCs (ABB/URS, 1993). Further, a total of 117 groundwater samples were collected at 8- to 15-foot intervals from the 39 cone penetrometer locations associated with the FT-002 remedial investigations. These samples were analyzed for various chlorinated solvents and fuel-related hydrocarbons, including benzene, toluene, ethylbenzene, m/p-xylene, o-xylene, trans-1,2-DCE, cis-1,2-DCE, TCE, and tetrachloroethene (PCE). Appendix B contains sampling locations and results of these sampling efforts.

2.1.3.1 Core Plume

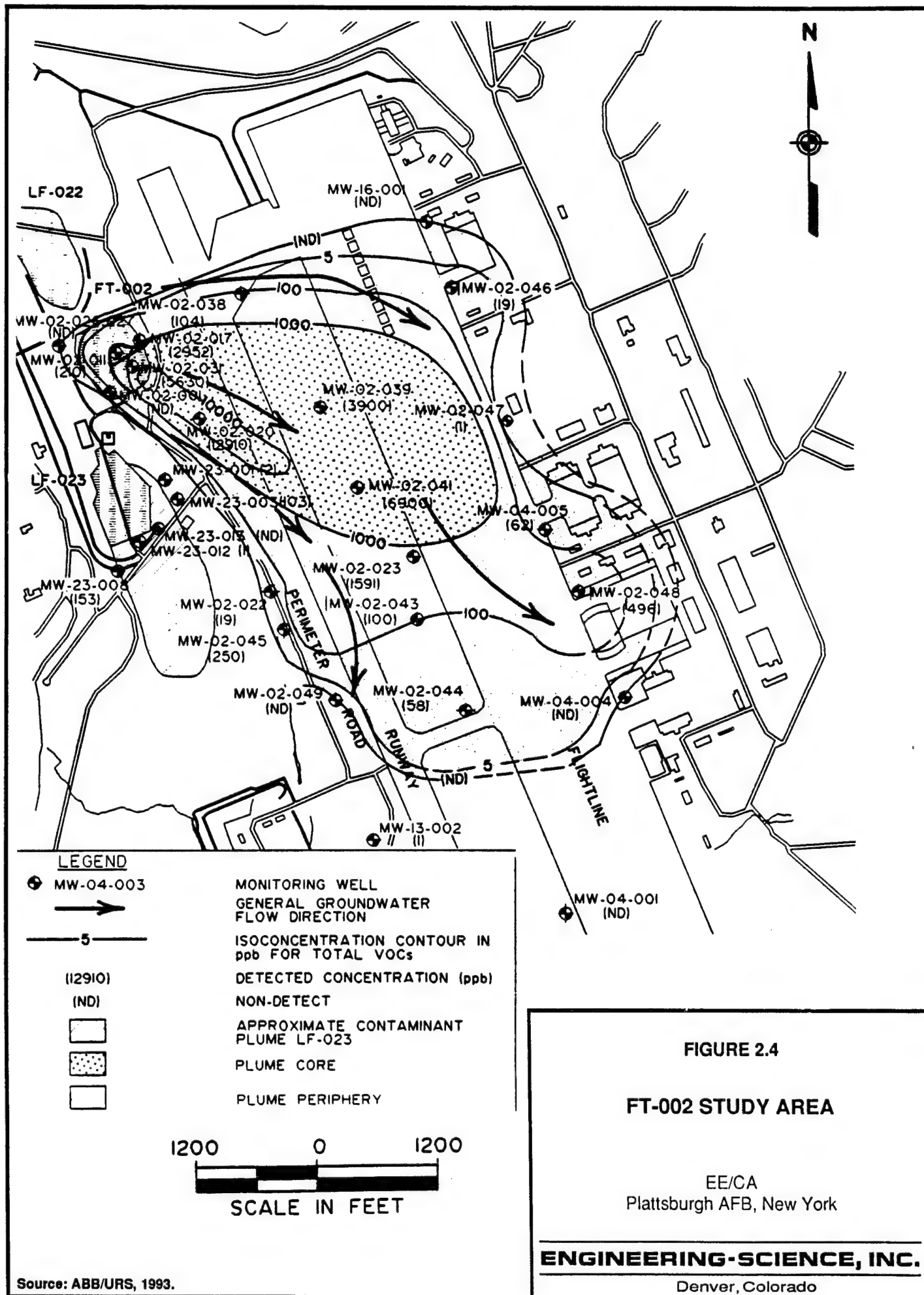
The primary contaminants associated with the core of the plume are the solvents TCE and DCE and the fuel-related BTEX compounds. Ten other VOCs have also been detected in core plume groundwater samples and are considered site contaminants; these VOCs are listed in Table 2.4 with relevant concentration and comparison data.

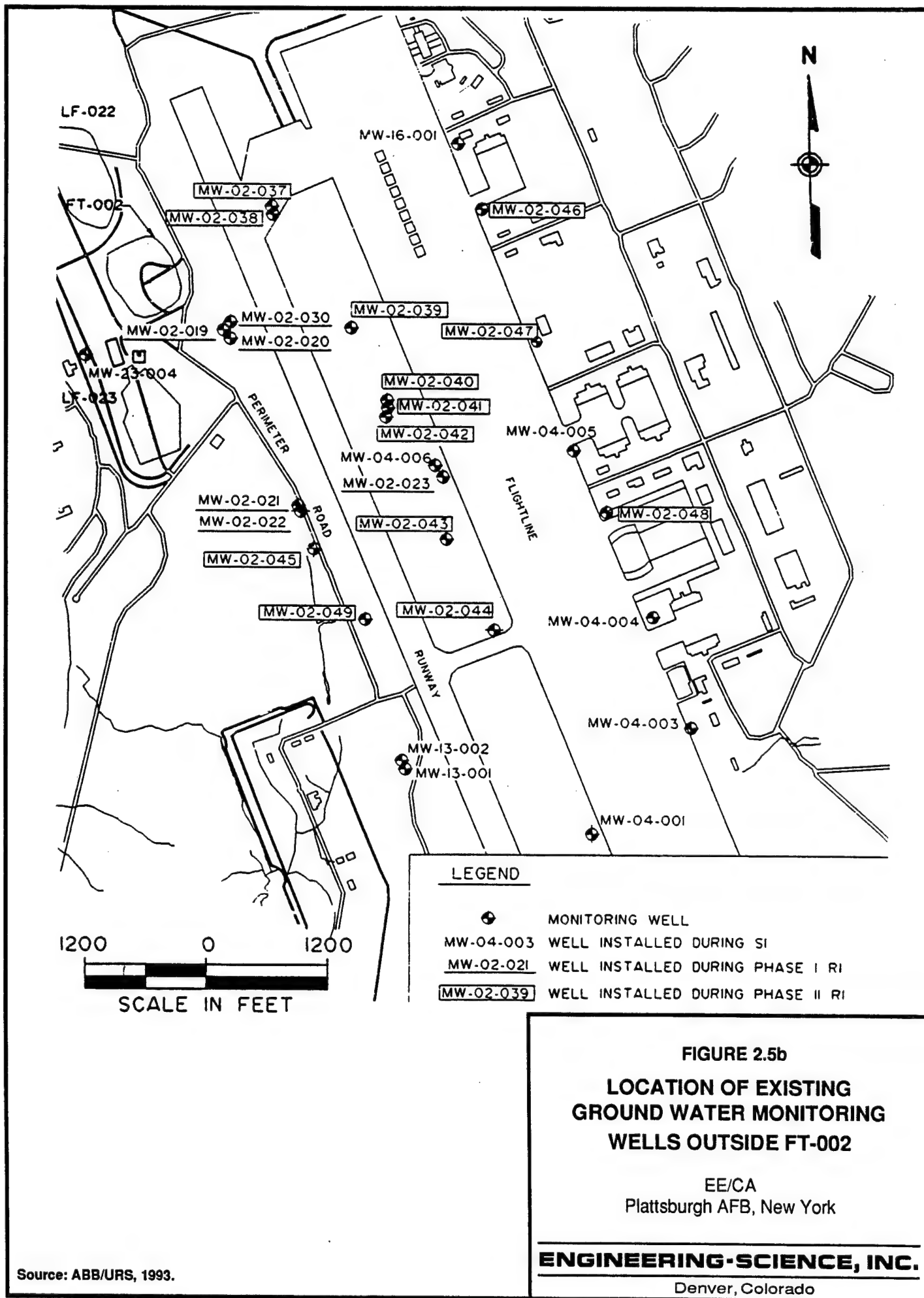
The primary SVOCs detected in groundwater from the core of the plume are naphthalene and four phenolic compounds (phenol, 2-methylphenol, 4-methylphenol, and 2,4-dimethylphenol). The fuel-related compound 2-methylnaphthalene is also considered a core plume contaminant (Table 2.4).

The core groundwater plume in the upper unconfined aquifer also contains significant concentrations of 12 inorganic analytes detected above background concentrations. These inorganic analytes include aluminum, arsenic, calcium, chromium, iron, lead, magnesium, manganese, nickel, potassium, sodium, and zinc. Because these analytes have been detected above background concentrations, they are considered site contaminants. Magnesium, potassium, and sodium are probably not directly attributable to activities at the FT-002 site. Modeling activities in support of the intrinsic remediation option will only consider organic contaminants.

2.1.3.2 Plume Periphery

Several VOCs, SVOCs, and above-background metals concentrations are present in the periphery of the plume. A list of these contaminants, including key concentration and comparison data, is presented in Table 2.5. In summary, DCE and TCE are the primary VOC contaminants in the peripheral groundwater plume. Four other compounds, vinyl chloride, acetone, carbon disulfide, and 1,2-dichloroethane, are





**Table 2.4. Summary of Organic Groundwater Contamination
(Focus on Plume Core), Plattsburgh AFB**

Analyte	Background (ug/L)	Minimum (ug/L)	Maximum (ug/L)	Chemical-specific ARAR (ug/L)	Freq. detect?	Well ID# (max value)
1,1-dichloroethene (DCE)	ND	2	140	5	2/51	CP-02-020
1,2-dichlorobenzene	ND	1200	1200	4.7	1/38	MW-02-003
1,2-dichloroethane (DCA)	ND	45	45	5	1/51	CP-02-020
1,2-dichloroethene (total)	ND	7	18000	5	27/51	CP-02-020
1,2-trichloroethane (TCA)	ND	19	19	5	1/51	CP-02-020
2,4-dimethylphenol	ND	12	98	1	8/38	MW-02-020
2-butanone	103	11	690	50	9/51	MW-02-007
2-chlorophenol	ND	70	130	1	1/38	MW-02-041
2-hexanone	ND	96	96	50	1/51	CP-02-020
2-methylnapthalene	ND	14	9600	50	11/38	MW-02-003
2-methylphenol	ND	10	17	1	3/38	MW-02-020
4-chloro-3-methylphenol	ND	26	42	1	1/38	MW-02-041
4-methyl-2-pentanone	ND	70	70	50	1/51	CP-02-020
4-methylphenol	ND	18	140	1	8/38	MW-02-020
4-nitrophenol	ND	100	150	1	1/38	MW-02-041
Acenaphthene	ND	780	780	20	1/38	MW-02-003
Acetone	23	11	19	50	2/51	B-02-014
Benzene	ND	3	720	0.7	13/51	MW-02-031
Carbon disulfide	ND	1	280	50	3/51	CP-02-020
Chlorobenzene	ND	7	7	5	1/51	MW-02-030
Ethylbenzene	ND	7	1400	5	20/51	MW-02-006
Methylene chloride	ND	11.5	20	5	1/51	B-02-014
Napthalene	ND	26	3700	9	11/38	MW-02-003
Pentachlorophenol	ND	95	140	1	1/38	MW-02-041
Phenanthrene	ND	1700	1700	50	1/38	MW-02-003
Phenol	ND	10	110	1	4/38	MW-02-041
Tetrachloroethene (PCE)	ND	5	52	5	2/51	MW-02-017
Toluene	ND	15	4200	5	16/51	MW-02-025
Total xylenes	ND	6	13000	5	24/51	MW-02-003
Trichloroethene (TCE)	ND	4	3900	5	18/51	MW-02-039
bis(2-ethylhexyl)phthalate	85	13	1100	50	6/38	MW-02-003

Source: ABB/URS, 1993

**Table 2.5. Summary of Organic Groundwater Contamination
(Focus on Periphery Plume), Plattsburgh AFB**

Analyte	Background (ug/L)	Minimum (ug/L)	Maximum (ug/L)	Chemical-specific ARAR (ug/L)	Freq. detect?	Well ID# (max value)
1,1-dichloroethene (DCE)	ND	3	3	5	1/17	CP-02-010
1,2,4-trichlorobenzene	ND	14	14	5	1/13	MW-02-040
1,2-dichloroethane	ND	7	7	5	1/17	CP-02-010
1,2-dichloroethene (total)	ND	1	1	5	12/17	MW-02-040
Acetone	23	130	130	50	1/17	MW-02-020
Carbon disulfide	ND	9	110	50	2/17	CP-02-010
Trichloroethene (TCE)	ND	2	2	5	11/17	MW-02-040
Vinyl chloride	ND	6	6	2	1/17	CP-02-010

Source: ABB/URS, 1993

considered peripheral-area groundwater contaminants. These compounds are consistent with compounds detected in the source soil area and the free product, and with compounds reported in FT-002 historical operations data. In contrast to the core of the plume, however, 1,2,4-trichlorobenzene is the only SVOC detected in samples from the periphery of the plume.

Eleven inorganic analytes were detected in the periphery of the plume at concentrations exceeding corresponding background concentrations. In general, the inorganic contaminants detected in the peripheral plume appear to be attributable to FT-002 operations based upon background comparisons. However, the wells in which the highest concentrations of inorganic analytes were detected are at the edges of the plume where concentrations of primary organic contaminants are the lowest.

2.1.4 Receiving Surface Water Quality and Chemistry

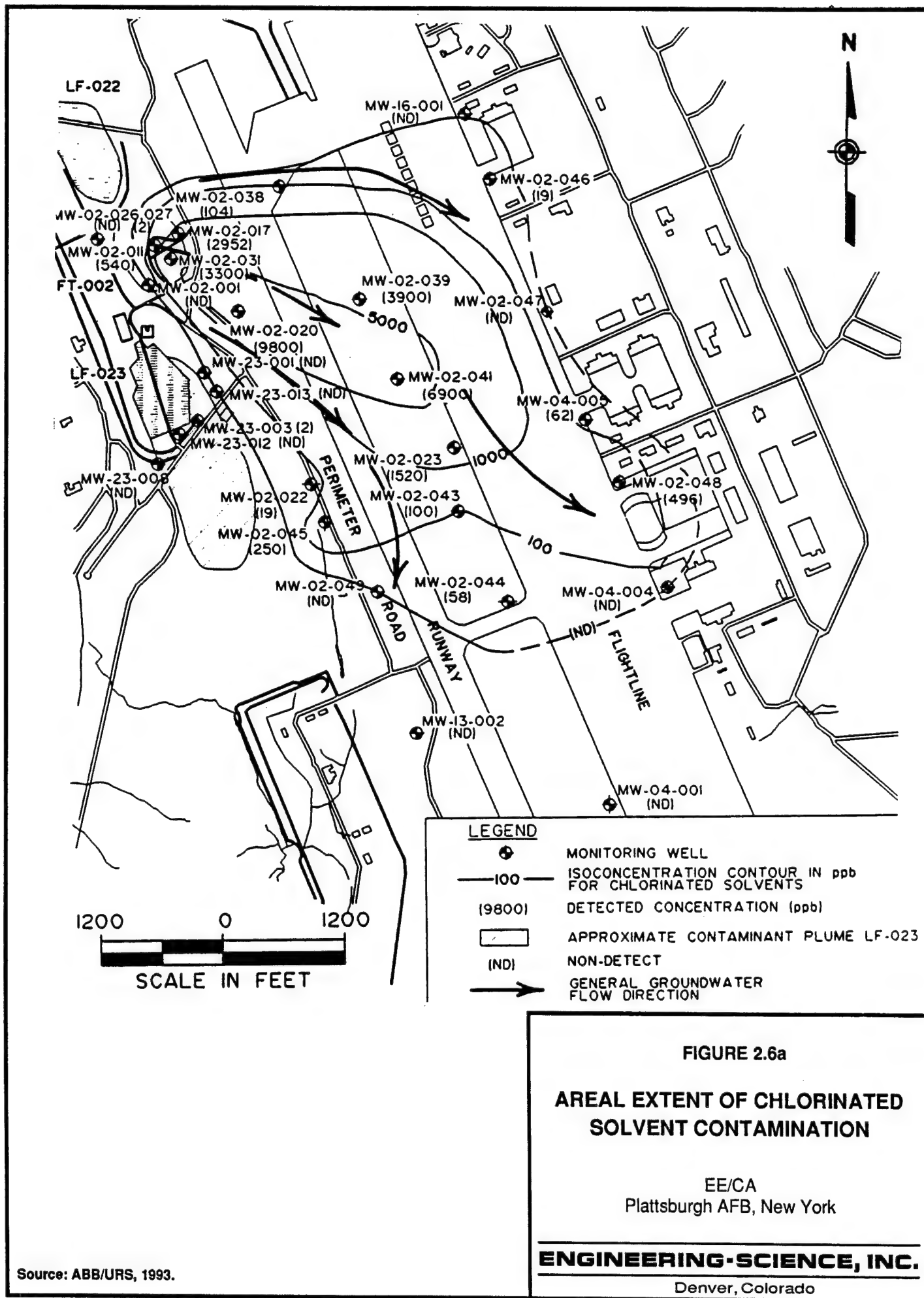
Groundwater discharges into surface water bodies at two locations at the FT-002 site: the stream located in the topographic low in the southwestern portion of the base, and the drainageway between the runway and flightline. TCE and DCE have been detected in samples from the gully outfall at concentrations ranging from 5 to 55 $\mu\text{g/L}$ and 5 to 110 $\mu\text{g/L}$, respectively. TCE and DCE have also been detected in the receiving stream at concentrations of 5 and 11 $\mu\text{g/L}$, respectively (ABB/URS, 1993). The consistency of these measured concentrations indicate that groundwater from the FT-002 dissolved contaminant plume may be discharging into the drainageway between the flightline and runway, from which it is being diverted to the stream.

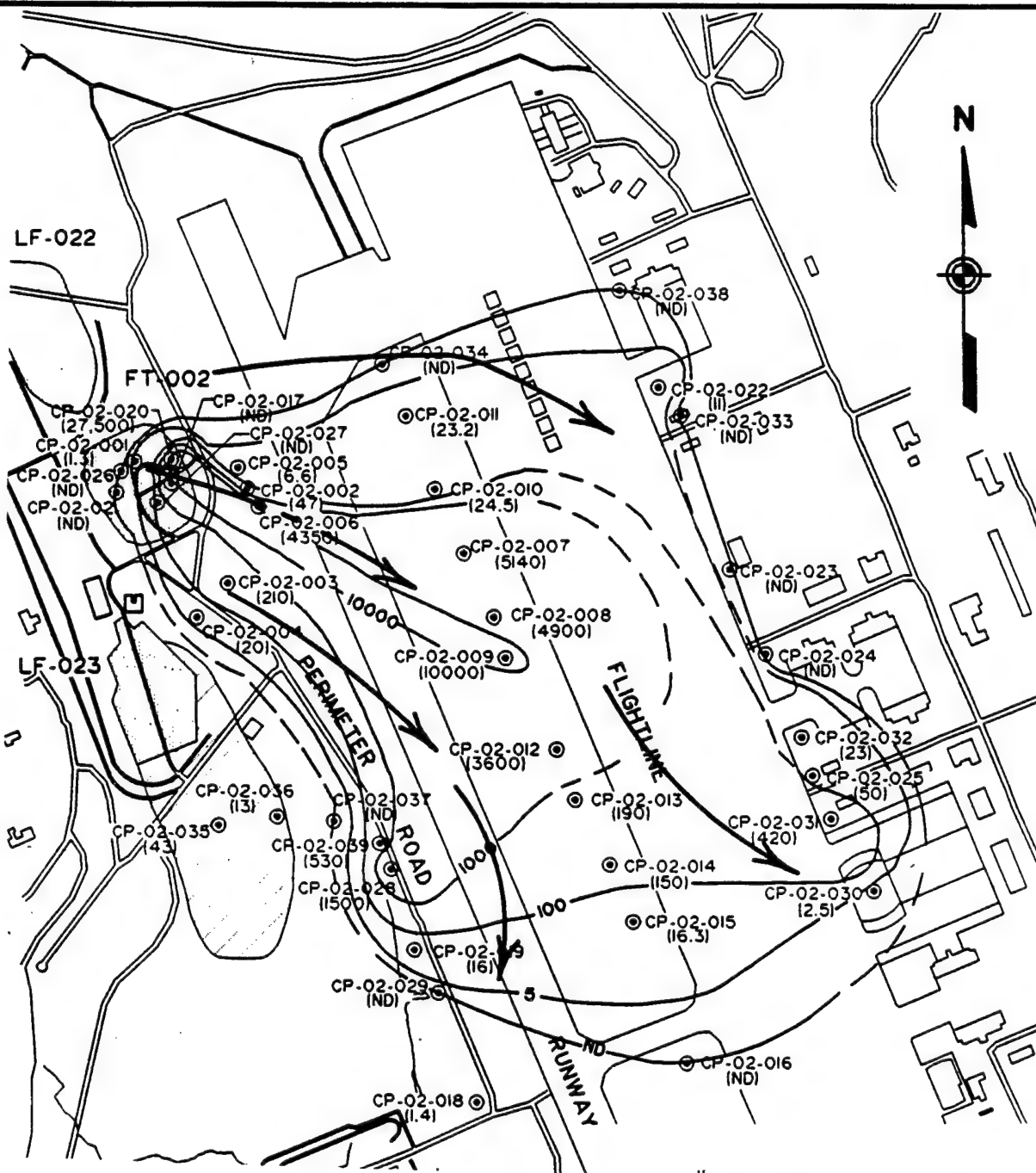
2.2 EXTENT OF CONTAMINATION

As discussed previously, two general types of contaminants are present in the subsurface soils and groundwater at the FT-002: fuel-related BTEX compounds and chlorinated solvents (primarily TCE and DCE). The vertical and horizontal extent and concentrations of these two types of contaminants differ significantly, possibly as a result of differences in source loading and transport and fate properties. Based on existing site data (both groundwater and cone penetrometer data), the nature and extent of the BTEX and chlorinated solvent plumes are discussed separately in detail below.

2.2.1 Extent of Chlorinated Solvent Plume

The core of the chlorinated solvent plume extends southeast from FT-002 beneath the runway, approximately 3,500 feet from the source area (Figures 2.6a and b). The remaining portions of the plume have spread laterally due to groundwater flow processes (with a maximum lateral spread of about 2,500 feet downgradient of the source area). Chlorinated solvent concentrations define the horizontal extent of the total plume, which extends about 5,500 feet downgradient of the FT-002 area. In general, the solvents TCE and DCE have been detected throughout the plume and are the only VOCs detected at the periphery of the plume. Elevated concentrations of chlorinated solvents in the southern portion of the plume could be attributable to an artificial conduit that diverts groundwater along the southern periphery of the plume (ABB/URS, 1993).





LEGEND

- 5 — ISOCONCENTRATION CONTOUR
IN ppb FOR CHLORINATED
SOLVENTS
- APPROXIMATE CONTAMINANT
PLUME LF-023(FS)
- ⊙ CP-02-001 PCPT BORING LOCATION
- GENERAL GROUNDWATER
FLOW DIRECTION
- (ND) NON-DETECT
- (1.4) CHLORINATED SOLVENT
CONCENTRATION(ppb)

1000 0 1000
SCALE IN FEET

FIGURE 2.6b

AREAL EXTENT OF CHLORINATED SOLVENT CONTAMINATION

EE/CA
Plattsburgh AFB, New York

ENGINEERING-SCIENCE, INC.

Denver, Colorado

The vertical extent of the chlorinated solvent plume is greatly affected by the hydrogeology in the FT-002 area (Figure 2.7). The core of the chlorinated plume is located near the midpoint of the saturated zone within the upper, unconfined aquifer (about 20 feet below the local groundwater table). The vertical migration of the chlorinated solvents from the source area appear to have been limited by the underlying clay layer. Away from the source area, however, the chlorinated solvent plume spreads vertically as well as laterally in the direction of groundwater flow (southeast). Over time, the contaminants appear to have migrated farther laterally than vertically, although significant vertical migration has occurred immediately downgradient of the FT-002 source area to a depth of about 60 feet below the local groundwater table. The lateral spread may be due to the size and long operational life of the source area, the physical and chemical characteristics of the contaminants, and/or the close proximity of influencing rivers that can enhance peripheral spreading of the plume (USEPA, 1989).

At most monitoring well locations, there also may be a significant component of upward groundwater vertical flow, which may also limit the vertical extent of the chlorinated solvent plume. It is difficult, however, to evaluate with certainty the effect on movement of the chlorinated solvent plume caused by vertical gradients because of other complicating effects which result from local density gradients and stratigraphic heterogeneities.

2.2.2 Extent of BTEX Plume

The horizontal extent of the BTEX plume is less than that of the chlorinated solvent plume (ABB/URS, 1993). BTEX compounds were detected primarily near the source area in FT-002 (Figures 2.8a and b). In 1991, the core plume of the BTEX compounds extended approximately 1,000 feet southeast from FT-002 beneath the runway, similar to the chlorinated solvent plume. The peripheral BTEX plume extended 3,500 feet essentially downgradient of the FT-002 source area. Near the FT-002 source area, the vertical extent of the BTEX plume appears similar to that of the chlorinated solvent plume (Figure 2.9). However, BTEX compounds are largely absent in groundwater samples taken away from the source area (e.g., 1,600 feet downgradient). As with the chlorinated solvent plume, the BTEX plume appears to have spread more laterally than vertically over time.

2.3 DEVELOPMENT OF THE CONCEPTUAL MODEL

The development of an adequate site-specific conceptual model is a critical path to determining whether the intrinsic remediation option is a viable remedial alternative for the FT-002 site. A site-specific conceptual model is a three-dimensional representation of the hydrogeologic system at the site based on available geological, hydrological, climatological, and geochemical data. Detailed information on the transport and fate of contaminants of concern in the groundwater system is also necessary to develop an integrated conceptual model that accounts for groundwater flow and contaminant migration. The conceptual model is used to aid in identifying any data gaps that must be filled to support the EE/CA and to help develop the site-specific parameters used in the Bioplume II® model.

NORTHWEST
Z

SOUTHEAST
Z

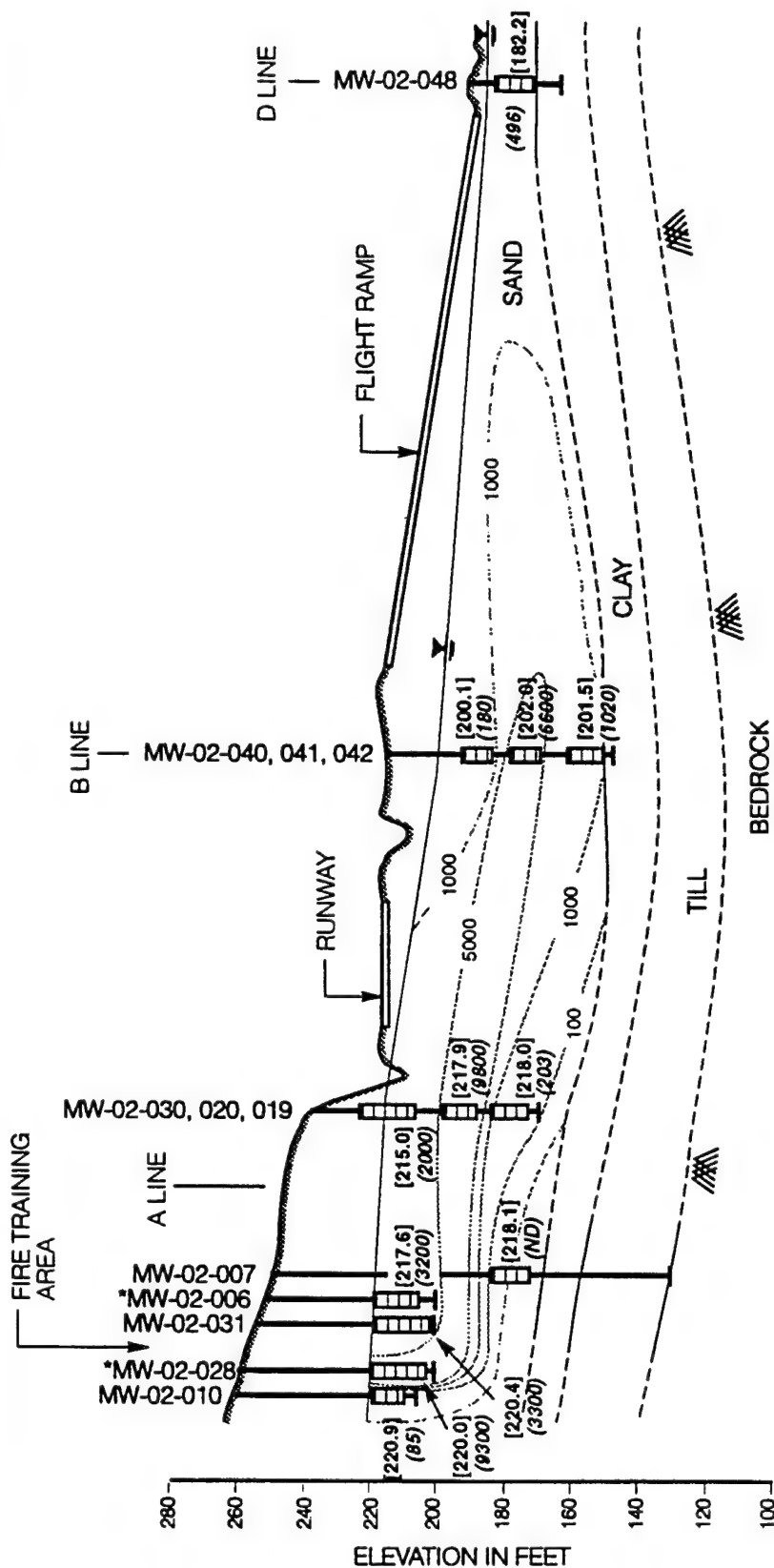


FIGURE 2.7

VERTICAL EXTENT OF CHLORINATED SOLVENT CONTAMINATION

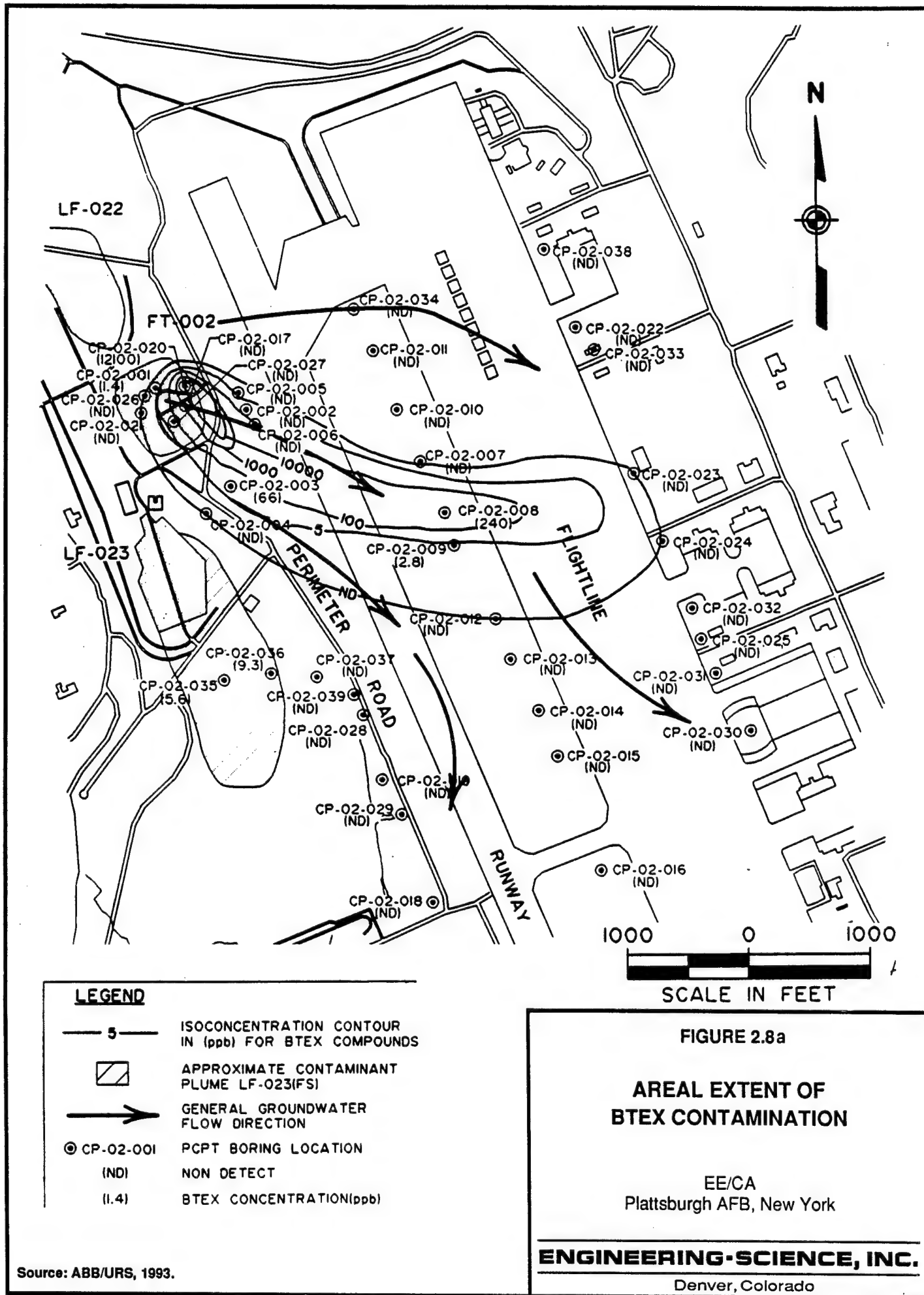
EE/CA

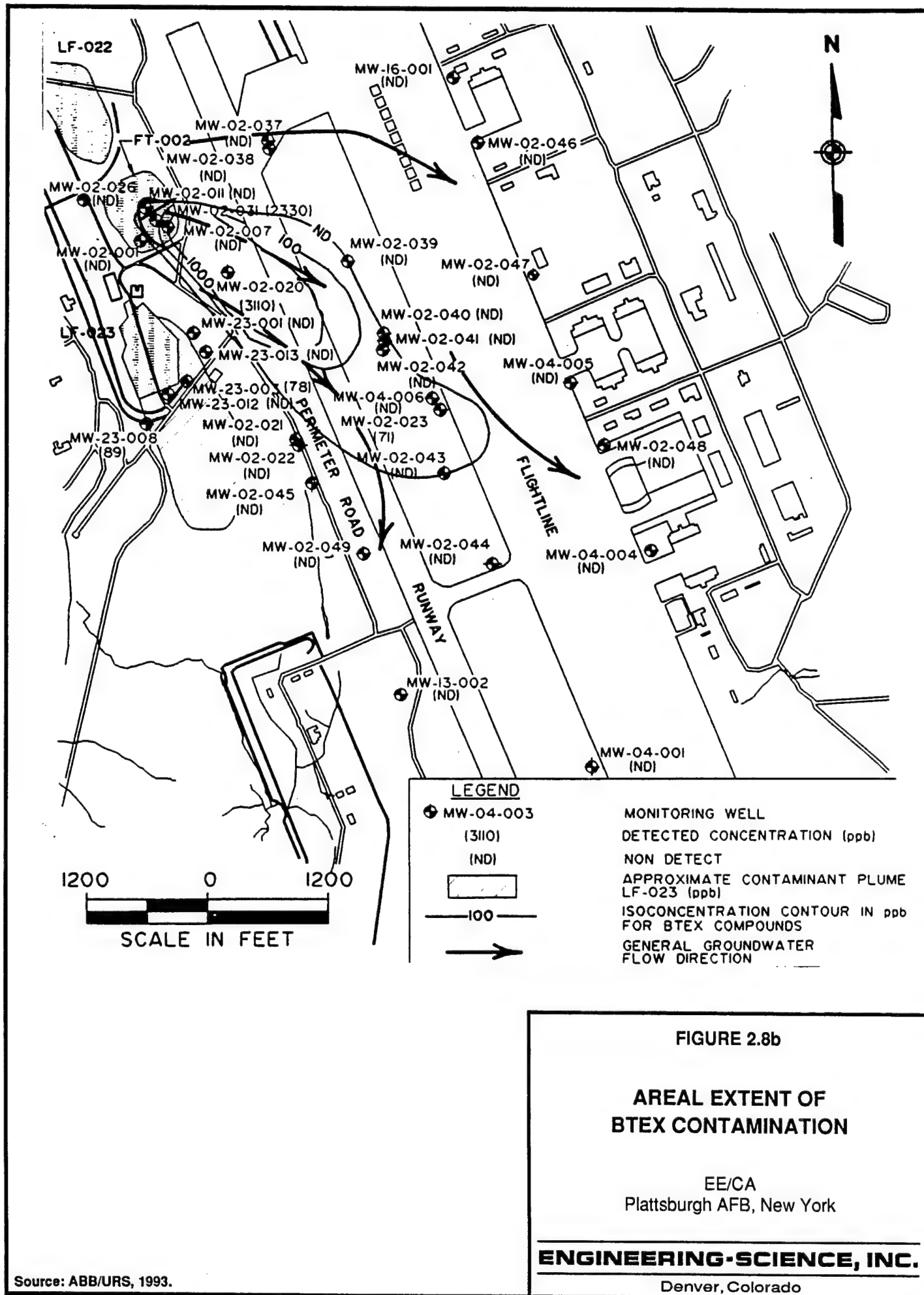
Plattsburgh AFB, New York

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Denver, Colorado

Source: ABB/JRS, 1993.





SOUTHEAST
Z

NORTHWEST
Z

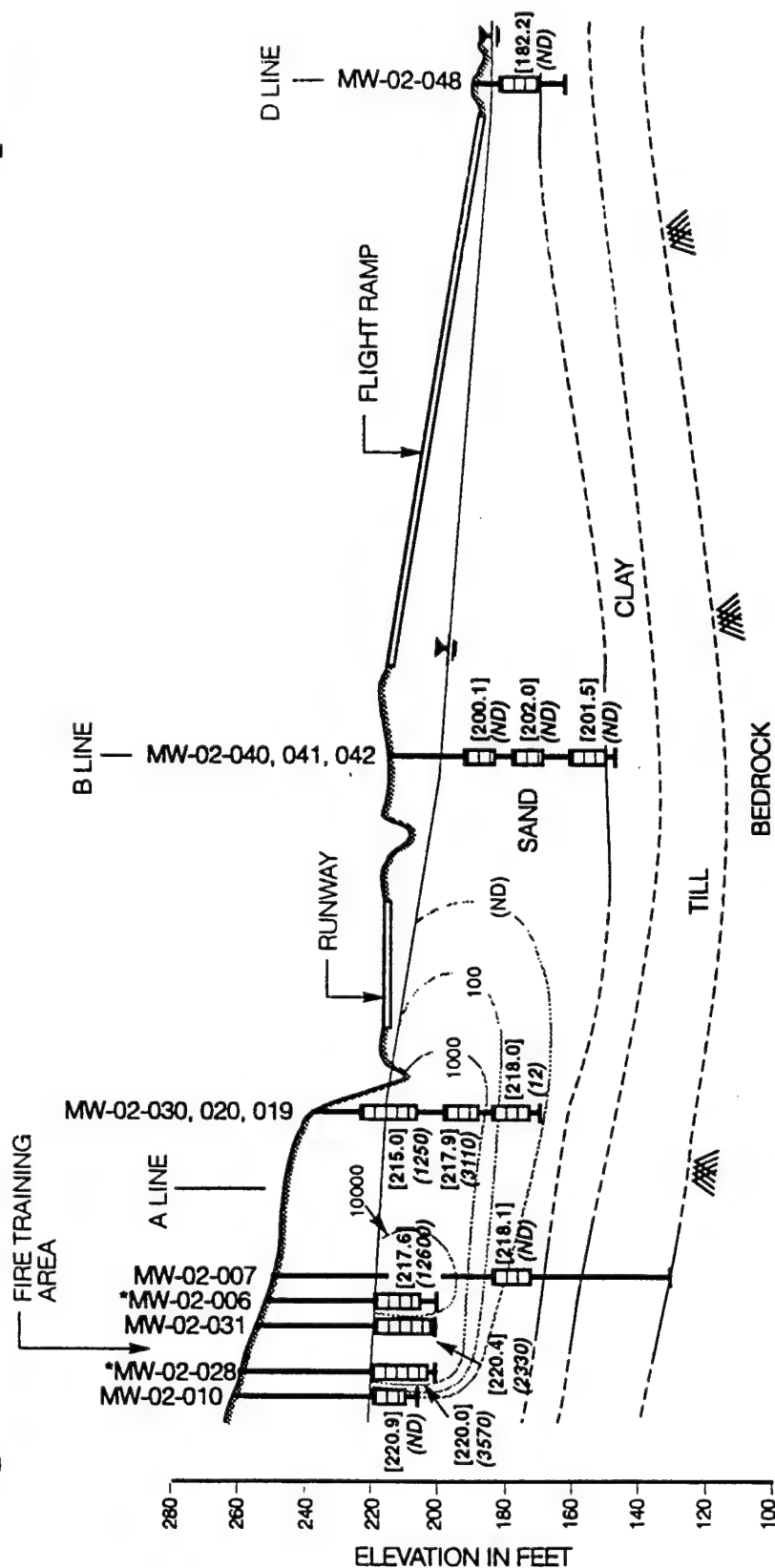


FIGURE 2.9

VERTICAL EXTENT OF BTEX CONTAMINATION

EE/CA

Plattsburgh AFB, New York

ENGINEERING-SCIENCE, INC.

Denver, Colorado

Source: ABB/URS, 1993.

Development of a successful conceptual model requires completion of four critical steps: (1) defining the problem to be solved; (2) integrating available site-specific and contaminant-specific data; (3) selecting an appropriate model for the specific site conditions; and (4) identifying any additional data needs. Site and contaminant-specific data are necessary to examine the behavior of the contaminants within model simulations and to determine potentially relevant transport and exposure pathways for the contaminants of concern.

2.3.1 Problem Definition

As discussed previously, the purpose of this study is to determine if the intrinsic remediation option is the most appropriate remedial alternative for the groundwater contamination present at site FT-002 or if a more active remedial alternative is necessary. Two separate classes of contaminants of concern have been identified in the soil and groundwater underlying the FT-002 site: chlorinated solvents and fuel-related BTEX compounds. Thus, the proposed study will seek to determine the transport and fate of both classes of contaminants by simulating contaminant behavior in the subsurface groundwater system under the governing physical and chemical regime. The study will explore, to the extent practicable, the possibility of co-metabolism of site-specific degradable organic contaminants.

2.3.2 Overview of Intrinsic Remediation

Numerous laboratory and field studies have shown that subsurface microorganisms can degrade a variety of hydrocarbons, including components of jet fuel and gasoline (e.g., Lee, 1988; Atlas, 1988; Young, 1984; Alvarez and Vogel, 1991; Jamison et al., 1975; Malone et al., 1993). The moderate- to low-molecular-weight compounds, such as the BTEX compounds, appear to be most amenable to biodegradation. The process of biodegradation of fuel hydrocarbons occurs naturally when an indigenous (and properly acclimated) population of hydrocarbon-degrading microorganisms is present in the aquifer and sufficient oxygen and nutrients are available to these microorganisms.

The rate of natural biodegradation is generally limited by a lack of oxygen rather than by a lack of nutrients, such as natural nitrogen or phosphorus (Borden and Bedient, 1986). Thus, the rate of natural aerobic biodegradation in shallow aquifers is largely dependent upon the rate at which oxygen enters the contaminant plume. Aquifers in sandy soils (such as those underlying the FT-002 site), which provide high transmissivity and vertical reaeration, are excellent candidates for the occurrence of natural biodegradation.

A significant reduction in dissolved oxygen within an existing BTEX plume is a strong indication that indigenous bacteria are actively biodegrading fuel contamination. This inverse relationship is indicative of natural aerobic biodegradation because microorganisms consume oxygen when mineralizing BTEX compounds to carbon dioxide and water. These microorganisms use oxygen as a cosubstrate during the initial stages of hydrocarbon metabolism, and as a terminal electron acceptor for energy production during the later stages (Higgins and Gilbert, 1978; Gibson and Subramanian, 1984; Young, 1984). Contaminant-specific calculations based on the stoichiometry of the mineralization reaction yield the amount of oxygen necessary to support the degradation of the contaminant of concern. A conservative estimate of the

amount of dissolved oxygen necessary to convert total BTEX to carbon dioxide is 3.1 pounds of oxygen per 1 pound of BTEX.

The presence of additional organic degradable compounds may also enhance the degradation of hydrocarbons and/or chlorinated solvents through co-metabolism (Howard, 1990). Co-metabolism has been defined as the biotransformation of one substance not normally used to meet metabolic needs in the presence of another biotransformable substance that can be used to meet metabolic needs. Thus, BTEX compounds could act as the primary substrates that can be used to meet the growth demands of the indigenous microorganisms, although the chlorinated solvents may be fortuitously biotransformed. This secondary biotransformation may be attributable to an increased demand for an additional source of energy and biosynthesis material for bacterial maintenance and growth. Additionally, the need to supplement the specific primary substrate may activate enzymes necessary for the biotransformation of the secondary substrate.

Many recalcitrant organic compounds, such as chlorinated solvents, may be degraded in the presence of more highly concentrated, different compounds that are used to meet the growth and energy requirements of the local biomass (e.g., BTEX compounds). This form of co-metabolism is called secondary utilization, since the recalcitrant compounds become secondary substrates and may or may not provide some energy for growth (McCarty et al., 1981). It is important to note that a secondary substrate does not have to share the same enzymatic pathways as the primary substrate, but the indigenous microorganisms must be capable of biotransforming both compounds.

Specific primary substrates may also be needed to activate the enzymes necessary for biotransformation of recalcitrant organic pollutants. Thus, the enzymes produced by the local biomass to metabolize the primary substrate can interact with the recalcitrant secondary substrate and bring about its biotransformation. Sufficient primary substrate must be available in the system to maintain the biotransforming enzymes in an active state. However, if the primary substrate is present in excessive concentrations, then preferential utilization of the primary substrate may repress utilization of the secondary substrate. This study will explore (to the extent practicable) the potential for co-metabolism under the site-specific groundwater conditions at the FT-002 site.

2.3.3 Selection of Model Code

To accomplish the stated purpose of this study, a simulation model must be capable of computing changes in contaminant concentration caused by at least four distinct processes: (1) advective transport, (2) hydrodynamic dispersion, (3) fluid sources (e.g., injection wells, drainageways, receiving surface streams), and (4) reactions (e.g., adsorption, biodegradation, abiotic degradation).

The Bioplume II® model is based upon the U.S. Geological Survey (USGS) two-dimensional (2-D) solute transport model modified to include a biodegradation component that is activated by a superimposed plume of dissolved oxygen (Rifai et al., 1988). Bioplume II® solves the USGS 2-D solute transport equation twice, once for hydrocarbon concentrations in the aquifer and once for a dissolved oxygen plume. The two plumes are then combined using superposition at every particle move to simulate

the biological reaction between hydrocarbons and oxygen. The Bioplume II® model calculates changes in contaminant concentration due to biodegradation reactions by assuming an instantaneous reaction between the contaminant and dissolved oxygen. The instantaneous reaction decreases the concentration of the contaminant by an amount proportional to the available dissolved oxygen in the aquifer. The model calculation is based upon modified Monod kinetics to simulate the degradation of hydrocarbon compounds and assumes that the hydrocarbons are directly mineralized to carbon dioxide and water. Because the model does not account for increased degradation due to the production of cell mass and intermediate reaction products, the extent of biodegradation is underestimated (e.g., see Malone et al., 1993). Thus, the Bioplume II® model presents a very conservative estimate of the amount of biodegradation occurring in the subsurface. Actual biodegradation rates will be higher than predicted by the model, and transport distances will be overestimated.

2.3.4 Governing Physical Parameters

Groundwater flow for the FT-002 site was modeled using the USGS MODFLOW model as part of the phase II groundwater remedial investigation (ABB/URS, 1993). The modeled area covered about 6,200 acres and was bounded by the Saranac River, Lake Champlain, and other artificial, institutional boundaries. Although this model was shown to adequately simulate groundwater flow, the MODFLOW model must be coupled with a solute transport model to simulate contaminant transport and fate. A preliminary modeling effort using a solute transport code was completed for the draft groundwater operable unit feasibility study report (URS, 1993). This modeling effort only considered the potential effects of natural attenuation by analytically estimating dispersivities, groundwater seepage velocity, and a degradation constant for a target compound (i.e., 1,2-DCE). The purpose of the modeling activities proposed herein is to investigate the potential for natural attenuation of contaminants of concern within the subsurface environment at the FT-002 site using historical field data and additional data to be collected during this investigation. Intrinsic remediation hinges on the ability of the aquifer to retard migration of and/or eliminate contaminants of concern prior to completion of any receptor exposure pathway.

The governing physical parameters that will be incorporated into the Bioplume II® model will be based on existing site-specific stratigraphic and hydrogeological information. Based on available data, ES will model the FT-002 site as an unconfined sand and silty sand aquifer. Given the vertical extent of the chlorinated solvent and BTEX plumes and the lack of hydrologic connection to the lower aquifer units at the site, ES will only model the upper, unconfined aquifer. This approach is consistent with available data and the groundwater models described above.

The thin core contaminant plume suggests a fairly uniform sand aquifer with a low dispersivity and limited sorbing capacity. As demonstrated by site data (Tables 2.1 and 2.2), no noticeable trend exists in hydraulic conductivity as a function of depth. Thus, ES will model the upper, unconfined aquifer as a single layer accounting for variations in the hydraulic conductivity and thickness of the upper, unconfined aquifer within each grid cell to the extent practicable (Figure 2.10). An effective porosity of 0.35 will be used for the model, which is consistent with available data and the phase II remedial investigation results (ABB/URS, 1993).

The phase II remedial investigation MODFLOW model divided the FT-002 site into cell sizes ranging from 100x100 feet to 100x200 feet. The Bioplume II® model requires a constant cell size. ES recommends the use of cell sizes equal to or less than 180x230 feet to cover the areal extent of the total plume yet provide adequate resolution of the groundwater flow system at the site.

ES has used available site-specific hydrogeologic data and representative hydrogeologic cross-sections at the FT-002 site which show the two- and three-dimensional relationships between hydrostratigraphic units (i.e., conductive units and aquitards), surface water bodies, and groundwater divides at the site. These cross-sections also integrate groundwater potentiometric data to show the position of the potentiometric surface relative to lithostratigraphic units to allow definition of the groundwater flow system and identification of preferential contaminant transport pathways. Figure 2.11 depicts the location of two hydrogeologic cross sections. Figure 2.12 represents a northwest-southeast hydrogeologic cross section of the FT-002 site which is oriented roughly parallel to the direction of groundwater flow. This section shows that the depth of the saturated zone increases from the northwest to southeast across the site. Figure 2.13 represents a north-south hydrogeologic cross section of the FT-002 site which is oriented roughly perpendicular to the direction of groundwater flow. Figure 2.2 shows groundwater potentiometric information potentially suitable for use in the proposed modeling efforts.

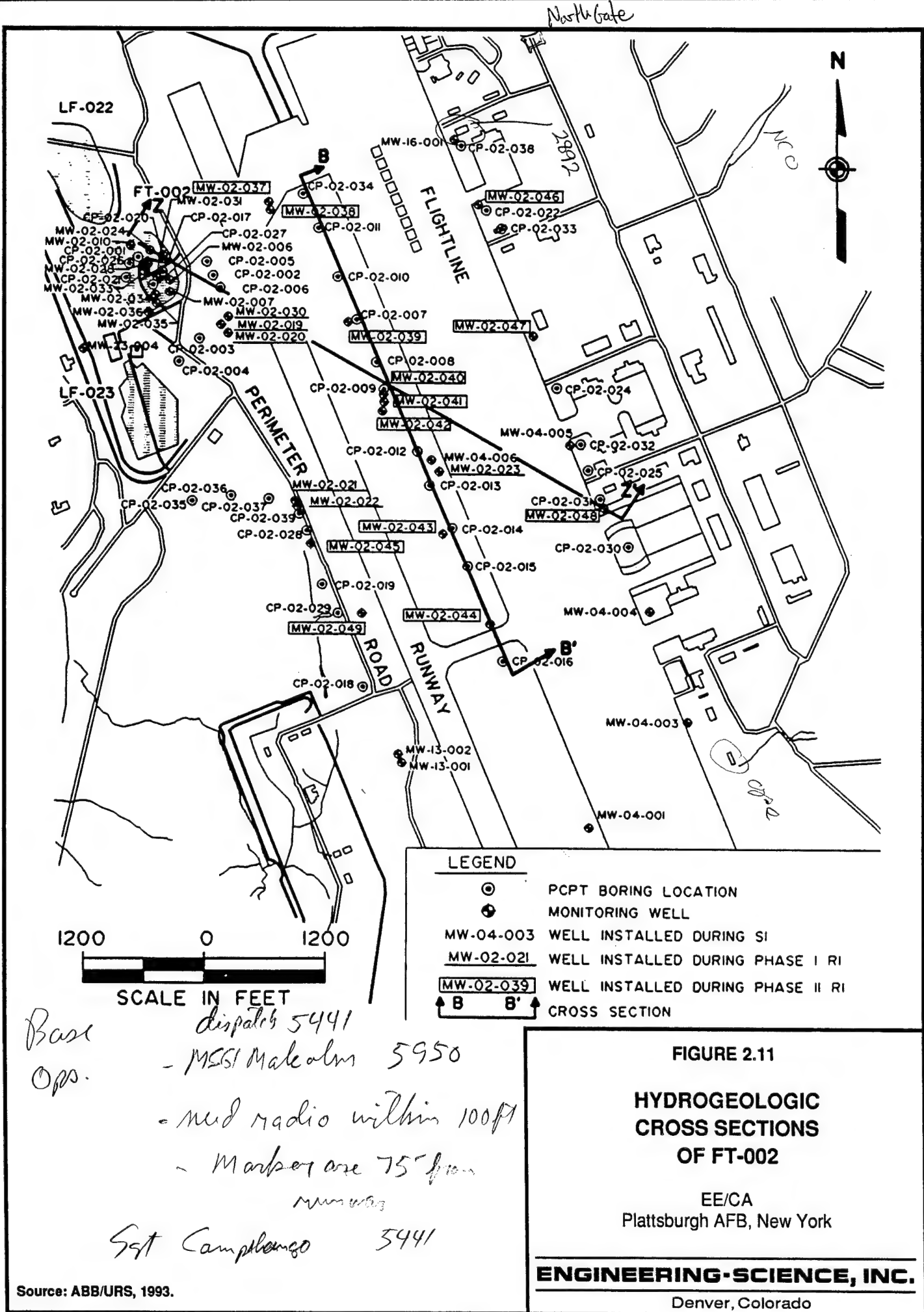
Based on the size of both the chlorinated solvent and BTEX plumes and the potential migration distance, a 20- by 30-cell model grid will be used. Each grid cell will have dimensions of 180 feet by 230 feet, based on existing site data. Figure 2.14 shows the proposed grid overlaid on the site map. The sizes of grid cells can be increased if preliminary runs of the Bioplume II® model indicate that the compounds of interest have the potential to migrate to and/or beyond model boundaries. Conversely, grid size can be reduced if greater resolution is desired and contaminant transport conditions allow.

A summary site-specific conceptual model is schematically represented in Figure 2.15. This conceptual model may be modified as additional site hydrogeologic and other site-specific data become available.

2.3.5 Governing Chemical Concerns

The primary contaminants of concern in the groundwater are the chlorinated solvent TCE and its degradation products cis- and trans-1,2-DCE; the volatile aromatic BTEX fuel components; fuel-related SVOCs naphthalene and 2-methylnaphthalene; and nonchlorinated phenols. The secondary contaminants of concern include volatile chlorinated solvents (e.g., chloromethane, vinyl chloride, dichloroethane, etc.), ketones, chlorinated phenols, other industrial solvents, and inorganics. Detailed groundwater data on these contaminants are presented in Appendix B.

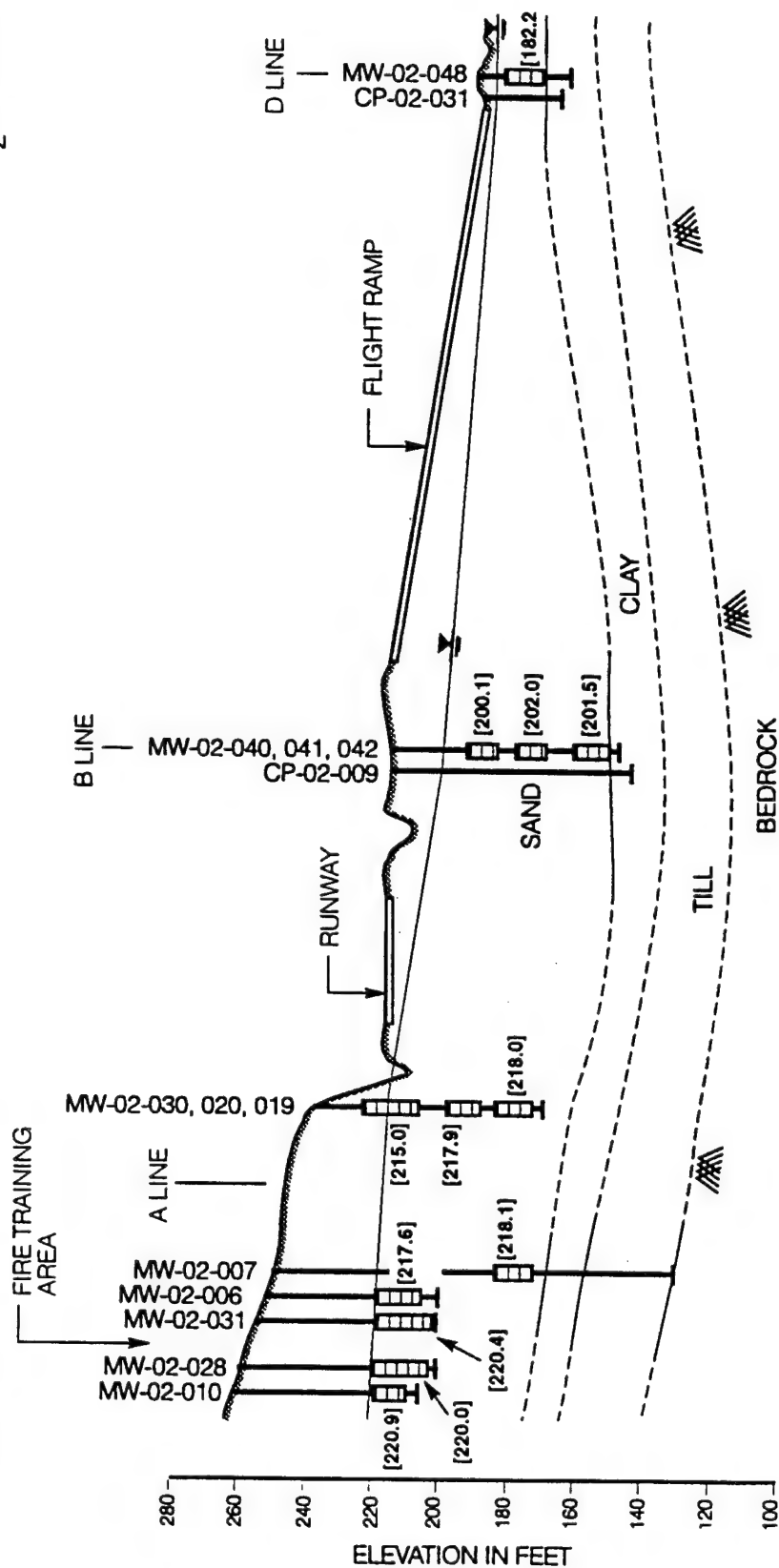
During installation and initial sampling of several groundwater monitoring wells, it was noted that the majority of TCE/DCE contamination was detected in free floating product or in soil near the groundwater table. The presence of DCE in the free product can be attributed to both onsite activities and/or the degradation of TCE. The presence of floating product and heavy soil contamination in the capillary fringe suggests that



Base
 Ops.
 dispatch 5441
 - MSGI Malcolm 5950
 - mud radio within 100ft
 - Marker are 75' from
 runway
 Sgt Camplongo 5441

NORTHWEST
Z

SOUTHEAST
Z



LEGEND
MW - 02 - 007

GROUNDWATER LEVEL (9/91 - 11/91)
 GROUNDWATER ELEVATION
 EXISTING MONITORING WELL
 BOREHOLE TERMINATION

Notes: 1) Bedrock surface inferred from seismic results (Appendix B).
 2) Groundwater level represents the hydraulic potential within the screen interval of the respective monitors. The water table surface reflects the potential measured in the shallower well at pair locations.

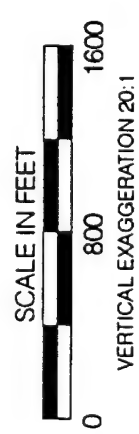
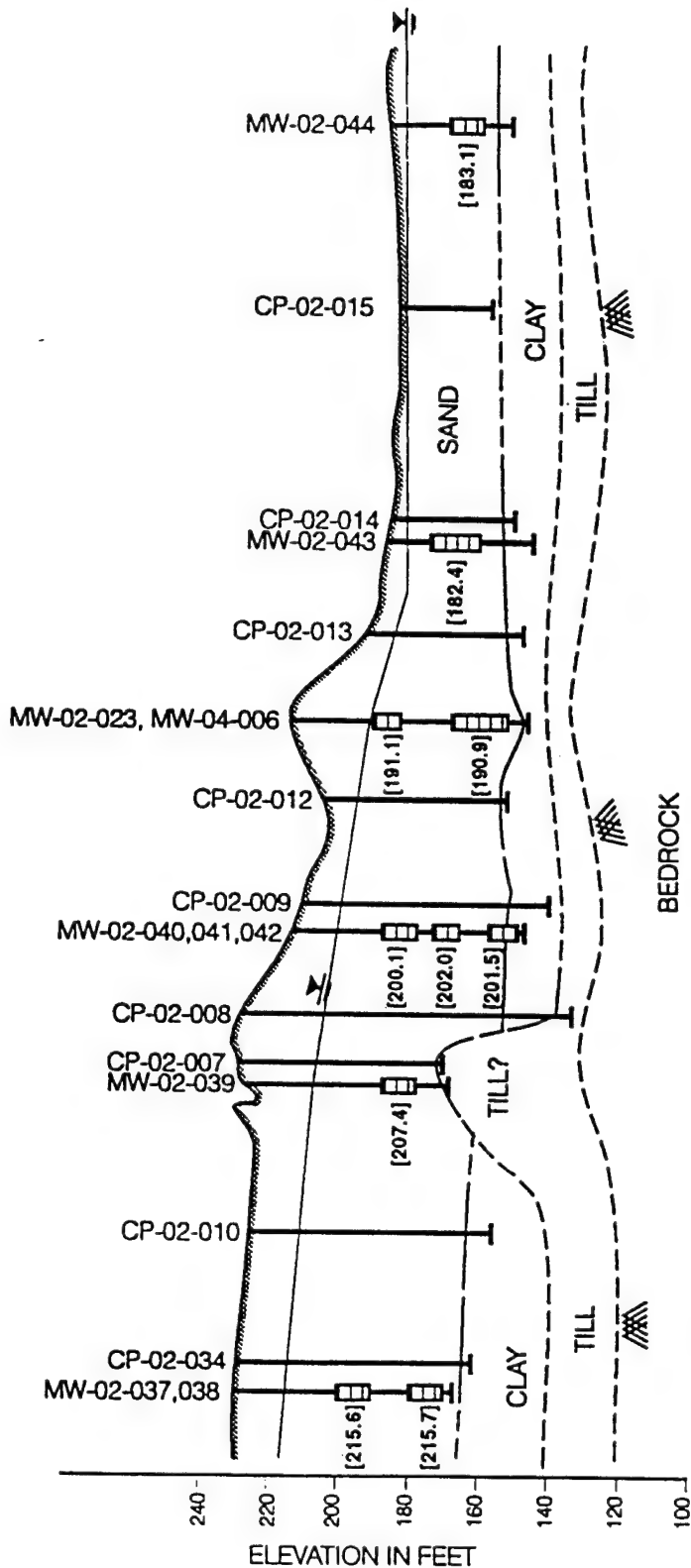


FIGURE 2.12
NORTHWEST-SOUTHEAST
HYDROGEOLOGIC PROFILE
 EE/CA
 Plattsburgh AFB, New York
ENGINEERING-SCIENCE, INC.
 Denver, Colorado

Source: ABB/URS, 1993.

NORTH
B

SOUTH
B'



Notes: 1) Bedrock surface inferred from seismic results (Appendix B).

2) Groundwater level represents the hydraulic potential within the screen interval of the respective monitors. The water table surface reflects the potential measured in the shallower well at pair locations.

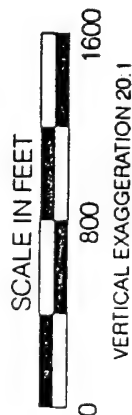


FIGURE 2.13

NORTH-SOUTH HYDROGEOLOGIC PROFILE

EE/CA
Plattsburgh AFB, New York

ENGINEERING-SCIENCE, INC.

Denver, Colorado

Source: ABB/URS, 1993.

WEST

EAST

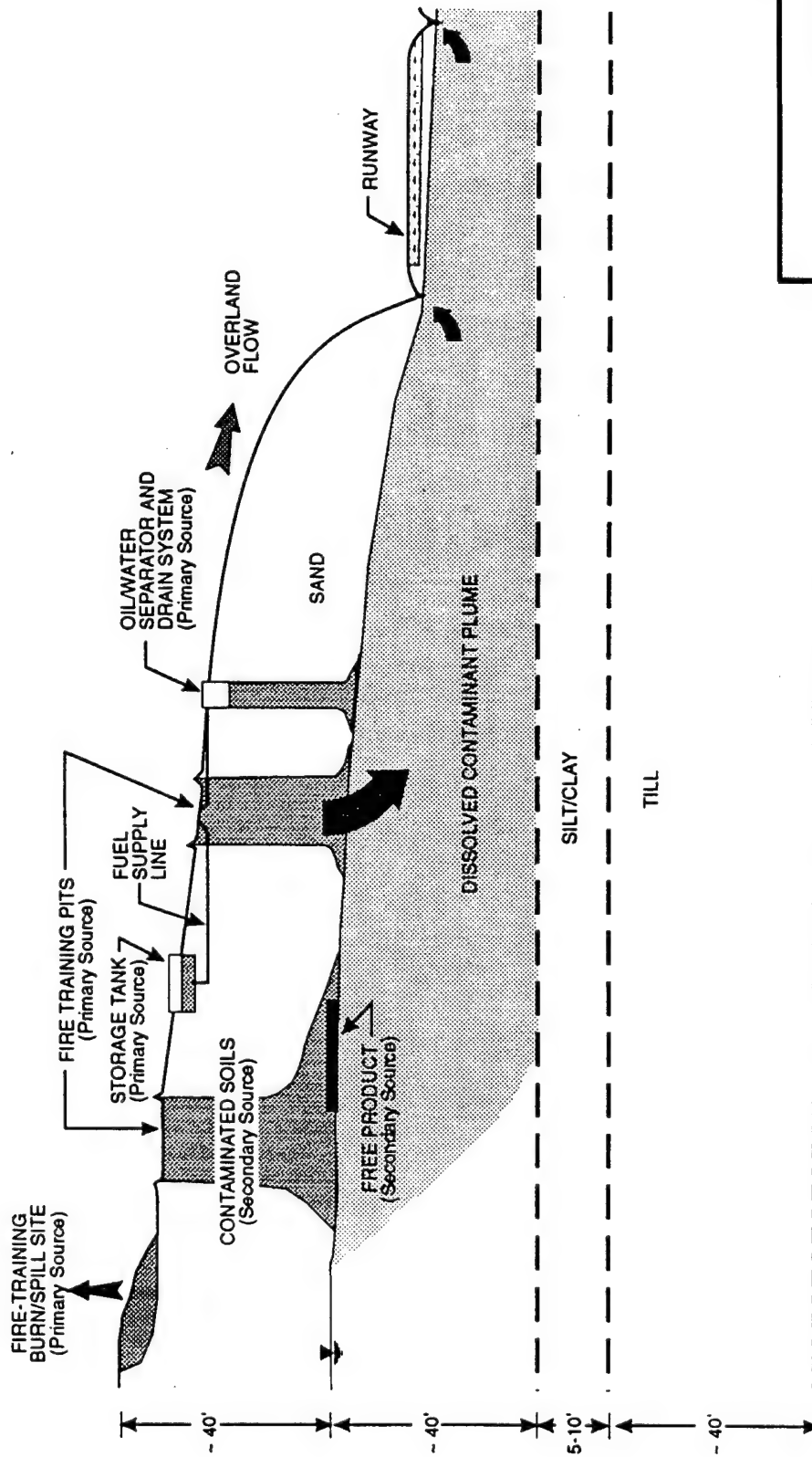


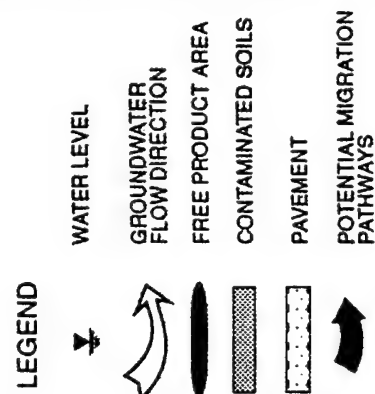
FIGURE 2.15

PRELIMINARY FT-002 CONCEPTUAL MODEL

EE/CA
Plattsburgh AFB, New York

ENGINEERING-SCIENCE, INC.

Denver, Colorado



LEGEND

BEDROCK

ANTICIPATED FLOW DIRECTION
(BEDROCK AQUIFER)

NOT TO SCALE

Source: ABB/URS, 1993.

oxygen transfer may be severely limited in the source area and that aerobic biological activity may not be occurring. However, installation and operation of the free product recovery and bioventing systems, which should be completed shortly, may enhance contaminant degradation via co-metabolic, aerobic biological processes. The degradation of TCE/DCE may be initiated or enhanced where there are higher concentrations of other degradable organic compounds (Howard, 1990). Site data suggest that biodegradation of TCE/DCE may be occurring both at the source and downgradient of the source where there are high concentrations of other degradable organic compounds. One of the goals of this study is to explore the possibility of co-metabolism of chlorinated solvents and BTEX compounds in subsurface groundwater systems.

Migration of the TCE/DCE-containing free product is likely inhibited by the aquifer matrix. However, these contaminants could be more mobile than anticipated if they are partitioning from the free product into the groundwater. Because free product is present at the site, it may be necessary to use a contaminant/water partitioning model such as that developed by Bruce et al. (1991) to provide a conservative source term to model the partitioning of the individual or indicator chlorinated solvent compound(s) from the free-product phase into the groundwater. In order to use this model, samples of free product must be collected and analyzed for mass fraction of chlorinated solvent compounds. DCE is expected to be transported more quickly than TCE because of its greater water solubility. DCE has been detected at higher concentrations downgradient of the source area, which supports the possibility of contaminant dissolution and biodegradation.

The adsorption of the chlorinated solvent compounds of interest can be estimated using site-specific data to calculate an expected migration retardation coefficient. The degree of retardation of the chlorinated solvent plume will be calculated using the mass fraction of total organic carbon in the aquifer matrix and the octanol/water partitioning coefficient normalized for organic carbon of either the individual or selected indicator chlorinated solvent compound(s). This information will be incorporated into the model to simulate the behavior of the chlorinated solvents in a sandy aquifer.

The biodegradation of the fuel-related compounds of interest (BTEX) also appears to be inhibited within the FT-002 area. The degradation of BTEX compounds is inhibited by the surrounding anaerobic environment. Once these contaminants migrate away from the FT-002 source area and are exposed to more dissolved oxygen, biodegradation is likely occurring at a more rapid rate. This scenario is supported by existing site data, which show lower concentrations of these compounds in the peripheral plume. Chemical-specific calculations on the amount of dissolved oxygen necessary to mineralize a contaminant of interest will be developed using site-specific data and/or literature-derived information.

The migration of free product containing BTEX compounds is also likely inhibited by the aquifer materials. Again, these contaminants could be more mobile than anticipated if they are partitioning from the free product into the groundwater. Application of a fuel/water partitioning model such as that developed by Bruce et al. (1991) may be required to provide a conservative source term to model the partitioning of the BTEX compounds from the free-product phase into the groundwater. In order to

use this model, samples of free product must be collected and analyzed for mass fraction of BTEX compounds.

The adsorption of the various BTEX compounds may also be incorporated into the model through a retardation coefficient based on site-specific and literature-derived information. The adsorption of BTEX compounds to aquifer materials may serve to enhance potential biodegradation by allowing increased oxygen transfer through the sorbed plume over time.

2.3.6 Data Gaps

One of the most important parameters in defining potential biodegradation at a site is the concentration of dissolved oxygen in the aquifer. Because this information has not been previously reported, ES will conduct field sampling activities to define this parameter. Additionally, contaminant-specific isopleth maps have not been identified. ES will develop these maps using existing data; supplemental field measurements will be necessary to support the development of complete isopleth maps in support of the intrinsic remediation option evaluation activities. This information will be transferred to model grid cells by overlaying the isopleth map on the model grid. Available information on anaerobic decay for each of the contaminants may also be identified and incorporated into the model code.

2.3.7 Potential Exposure Pathways and Receptors

Potential preferential contaminant migration pathways such as surface discharge points and subsurface utility corridors (artificial conduits) will be identified during the field work phase of this project. Such information can be obtained from Plattsburgh AFB maps which delineate areas that may facilitate rapid subsurface transport and/or surface discharge. Pathways to potential receptors may include discharge of contaminated groundwater into downgradient surface water bodies (e.g., drainageway and surface stream), and migration of the contaminant plume toward downgradient potable and nonpotable water wells.

Potential human and/or ecological receptors of chlorinated solvent and BTEX contaminated groundwater will be identified. Although no designated wetland or ecological sensitive habitat has been identified within or adjacent to FT-002, the immediate area will be surveyed briefly to identify any potential ecological receptors. In addition, a survey of groundwater wells located downgradient of the dissolved-phase plume will be conducted. Because of the hydrologic connection between the groundwater plume and receiving surface water bodies, it may be necessary to survey the area outside the immediate FT-002 site.

SECTION 3

COLLECTION OF ADDITIONAL DATA

To accurately complete the EE/CA and to demonstrate that natural attenuation of site-related contaminants is occurring at Site FT-002, additional site-specific hydrogeologic data will be collected. The physical and chemical hydrogeologic parameters listed below will be determined during the field work phase of the EE/CA.

Hydrogeologic characteristics to be determined include:

- Depth from measurement datum to the groundwater surface.
- Depth from measurement datum to the base of the shallow saturated zone (where feasible).
- Locations of potential groundwater recharge and discharge areas.
- Locations of downgradient wells and their uses.
- Hydraulic conductivity through slug tests, as required.
- Estimate of dispersivity, where possible.
- Stratigraphic analysis of subsurface media.
- Determination of extent and thickness of free-phase product.

Chemical hydrogeologic characteristics to be determined include:

- Dissolved oxygen concentration.
- Temperature.
- Specific conductance.
- pH.
- Chemical analysis of free product to determine mass fraction BTEX.
- Additional chemical analysis of groundwater and soil for the parameters listed in Table 3.1.

In order to obtain these data, cone penetrometer testing (CPT), groundwater and product sampling, soil gas sampling, and soil sampling will be completed at Site FT-002 in support of the EE/CA. The following sections describe the procedures that will be followed when collecting additional site-specific data. Laser-Induced-Fluorescence (LIF), cone penetrometer, and soil gas sampling methods are described in Section 3.1. Procedures to be used to sample existing groundwater monitoring wells and collect

**Table 3.1 Laboratory Analytical Protocol for Groundwater and Soil
EE/CA Work Plan, Plattsburgh AFB**

Matrix	Method	Volume Group	Field (F) or Analytical Laboratory (L)
<u>Water</u>			
Alkalinity (Carbonate [CO ₃ ²⁻] and Bicarbonate [HCO ₃ ⁻])	E310.2	3	L
Aromatic hydrocarbons	Gas chromatography - headspace SW8020-RSKERL-SOPL-122	2	L
Carbon dioxide (CO ₂)	Gas chromatography - headspace SW8020-RSKERL-SOPL-122	--	--
Chloride	E300 or SW9056	3	L
Chlorinated compounds	Gas chromatography - headspace SW8020-RSKERL-SOPL-122	2	L
Conductivity	E. 120.1/SW9050	3	L
Ethane	Gas chromatography - headspace SW8020-RSKERL-SOPL-122	4	L
Ethene	Gas chromatography - headspace SW8020-RSKERL-SOPL-122	4	L
Ferrous Iron (Fe ²⁺)	Colorimetric	1	F

A7-28-3

**Table 3.1 Laboratory Analytical Protocol for Groundwater and Soil
EE/CA Work Plan, Plattsburgh AFB (continued)**

Matrix	Method	Volume Group	Field (F) or Analytical Laboratory (L)
Methane	Gas chromatography - headspace SW8020-RSKERL-SOPL-122	4	L
Nitrate/nitrite	Colorimetric	6	L
Oxygen	HACH 16046 DO Meter	5	F
pH	E150.1/SW9040	5	F
Sulfate	Colorimetric	3	L
Temperature	Direct reading meter	5	F
Total fuel carbon	SW8020	2	L
Total organic carbon	SW8020	4	L
<u>Soil</u>			
BTEX	RSKERL-SOPL-72		
Chlorinated volatile organics			
Moisture	Dry @105°C		
Total petroleum hydrocarbons	Method 418.1		

**Table 3.1 Laboratory Analytical Protocol for Groundwater and Soil
EE/CA Work Plan, Plattsburgh AFB (continued)**

Matrix	Method	Volume Group	Field (F) or Analytical Laboratory (L)
<u>Soil Gas</u>			
Hydrocarbon vapor	Direct reading meters		
Carbon dioxide	Direct reading meters		
Methane	Direct reading meters		
Oxygen	Direct reading meters		

Footnotes:

Volume Group

- 1 = 50 ml
- 2 = 80 ml
- 3 = 240 ml
- 4 = 120 ml
- 5 = 200 ml
- 6 = 120 ml
- 7 = 60 ml

A7-28-3

HydroPunch® samples are described in Section 3.2. Procedures to be used to collect soil core samples to verify LIF cone penetrometer and soil gas characterization data are described in Section 3.3.

3.1 CONE PENETROMETER AND SOIL GAS ANALYSIS

To further characterize the hydrogeologic conditions of the shallow subsurface at Site FT-002 for the intrinsic remediation demonstration, CPT will be completed. CPT will be conducted using the ARA penetrometer truck, which consists of an instrumented probe that is forced into the ground using a hydraulic load frame mounted on a heavy truck, with the weight of the truck providing the necessary reaction mass. The penetrometer equipment is mounted inside an 18-foot van body attached to a 10-wheel truck chassis with a turbo-charged diesel engine. Ballast in the form of metal weights and a steel water tank, which can hold 5,000 pounds of water, are added to the truck to achieve an overall push capability of 45,000 pounds. This push capacity may be limited in tight soils by the structural bending capacity of the 1.405-inch outside-diameter (OD) push rods, rather than by the weight of the truck. The current 45,000-pound limitation is intended to minimize the possibility of push-rod buckling. Penetration force is supplied by a pair of large hydraulic cylinders bolted to the truck frame.

The penetrometer probe is of standard dimensions, having a 1.405-inch-OD 60-degree conical tip, and a 1.405-inch-OD by 5.27-inch-long friction sleeve. Inside the probe, two load cells independently measure the vertical resistance against the conical tip and the side friction along the sleeve. Each load cell is a cylinder of uniform cross section inside the probe which is instrumented with four strain gauges in a full-bridge circuit. Forces are sensed by the load cells, and the data are transmitted from the probe assembly via a cable running through the push tubes. The analog data is digitized, recorded, and plotted by computer in the penetrometer truck.

The penetrometer is normally advanced vertically into the soil at a constant rate of 48 inches per minute, although this rate must sometimes be reduced, such as when hard layers are encountered. The focus of the cone penetrometer sampling at Site FT-002 is to delineate the free-phase and dissolved-phase BTEX plumes. The magnitude of the penetration pore pressure is a function of compressibility and, most importantly, permeability. Penetration, dissipation, and resistivity data will be used to determine potential site layering as it is encountered in the field.

A LIF CPT system will be employed to characterize the areal extent of the free-phase plume at Site FT-002. The LIF CPT probe is designed to measure tip and sleeve stress, pore pressure, and LIF simultaneously. The fiber optic cable connected to the laser spectrometer, and a 6-pair electrical conductor connected to the CPT data acquisition system, are routed through the interior of the push tubes to the CPT probe. Two load cells measure vertical resistance beneath the tip and frictional resistance on the side of the probe, respectively. The pressure gauge located above the cone tip monitors the pore water pressure.

The basic laser system components of the LIF CPT are a Nd:YAG® pump laser, two separate and independent dye lasers, frequency-doubling crystals to convert the visible

dye laser output to ultraviolet, a fiber optic probe, a monochromator for wavelength resolution of the return fluorescence, a photomultiplier tube to convert photons into an electrical signal, a digital oscilloscope for waveform capture, and a control computer. The fiber optic probe for the cone penetrometer consists of a delivery and collection fiber, a protective sheath, a fiber optic mount within the cone, and a sapphire window. The up-hole portion of the system is adaptable to either groundwater monitoring fiber optic probes or an optical cone penetrometer probe. Optimal wavelengths to be used during a continuous CPT push will be determined from initial data. Wavelength is selected to give the strongest fluorescence signal, which can be attributed to the presence of contamination. Past experience suggests that a short wavelength of less than 275 nanometers (nm) may be appropriate for the fluorescence of BTEX.

In addition to LIF CPT data, soil gas sampling data will also be collected at 10-foot intervals at locations near each LIF CPT push. The following sections outline the overall sampling strategy to be completed in support of the intrinsic remediation EE/CA.

3.1.1 Sampling Strategy

LIF CPT data will be coupled with soil gas analysis to define the areal and vertical extent of the free-phase plume at Site FT-002. The cone penetrometer will be pushed from ground surface to approximately 10 feet below the groundwater level at any specific sample point. Soil gas samples will also be taken at 10-foot intervals, and will be analyzed for carbon dioxide, oxygen, total petroleum hydrocarbons (TPH), and methane. Feed lines for soil gas analyses will be attached directly to gas analytical instrumentation housed in the penetrometer truck.

It is anticipated that 12 to 16 LIF CPT points will be sampled to define the edges of the free-phase plume. The general area to be sampled was determined during the October 18 and 19, 1993 meetings at Plattsburgh AFB. Sample locations will be along the suspected plume centerline, in an iterative, forward and backward fashion to define the leading edge of the free-phase plume. Once the downgradient edge of the free-phase plume has been identified, additional cone penetrometer sample points will define the lateral edges. Initial cone penetrometer samples will be taken in the vicinity of previous CPT boring locations CP-02-020 and CP-02-027 (see Appendix B). Soil gas sample locations will be immediately adjacent to LIF CPT sample points.

3.1.2 CPT Hole Grouting Procedure

Cone penetrometer testing can create holes which may provide potential contamination pathways into groundwater supplies. To prevent any cross contamination, the test holes will be grouted to seal the hole and eliminate the contaminant migration pathway. The instrumented cone assembly and any other retrievable portion of the assembly will be completely removed from the penetration hole. Grout will be prepared using bentonite pellets.

All necessary digging permits will be obtained prior to mobilizing to the field. In addition, all utility lines will be located and proposed CPT locations cleared prior to any CPT pushing activities.

3.1.3 Decontamination Procedures

The CPT push rods will be cleaned with ARA's CPT steam-cleaning system (rod-cleaner) as the rods are withdrawn from the ground. A vacuum system has been developed, which results in nearly 100-percent recovery of steam-cleaning rinseate from the rod-cleaner located beneath the CPT truck. Rinseate is generated only as the rods move past the cleaner, thereby minimizing liquid waste generation. Care will be taken not to apply the pressurized steam to the LIF module. Rinseate does not have to be collected for disposal, per Plattsburgh AFB.

Potable water to be used in CPT equipment cleaning, decontamination, or grouting will be obtained from one of the base's onsite water supplies. Water use approval will be verified by contacting the appropriate facility personnel. Only potable water will be used for the activities listed above. The field hydrogeologist will make the final determination as to the suitability of site water for these activities. Precautions will be taken to minimize any impact to the surrounding area that might result from decontamination operations. Fuel, lubricants, and other similar substances will be handled in a manner consistent with accepted safety procedures and standard operating practices.

3.2 GROUNDWATER SAMPLING

This section describes the scope of work required for collecting groundwater quality samples at the existing groundwater monitoring wells and near existing LIF CPT locations using the HydroPunch® sampling apparatus. All water samples collected from groundwater monitoring wells will be obtained using dedicated, disposable bailers. In order to maintain a high degree of quality control during this sampling event, the procedures described in the following sections will be followed.

Groundwater sampling will be conducted by qualified scientists and technicians trained in the conduct of well sampling, records documentation, and chain-of-custody procedures. In addition, sampling personnel will have thoroughly reviewed this plan prior to sample acquisition and will have a copy of the plan available onsite for reference.

For this project, groundwater samples will be collected in two phases. Phase one will consist of collecting groundwater samples near LIF CPT locations using the HydroPunch®. This phase of the groundwater sampling process is described in Section 3.2.3.1 and will occur during December 3 and 6, 1993. The second phase of groundwater sampling is described in Section 3.2.3.2 and will occur during December 3 through 6, 1993.

Activities that will occur during groundwater sampling are summarized below:

- Assembly and preparation of equipment and supplies;
- Inspection of the well integrity (for monitoring well sampling), including
 - Protective cover, cap, and lock,
 - External surface seal and pad,
 - Well stick-up, cap, and datum reference,

- Internal surface seal, and
- Condition of bladder pump if present;
- Groundwater sampling, including
 - Water level measurements,
 - Visual inspection of borehole water,
 - Well casing evacuation, and
 - Sampling;
- Sample preservation and shipment, including
 - Sample preparation,
 - Onsite measurement of physical parameters, and
 - Sample labeling;
- Completion of sampling records;
- Completion of chain-of-custody records; and
- Sample disposition.

Detailed groundwater sampling and sample handling procedures are presented in following sections.

3.2.1 Groundwater Sampling Strategy

Groundwater samples will be collected from existing monitoring wells using a disposable bailer and near CPT locations using HydroPunch® groundwater sampling equipment.

3.2.1.1 HydroPunch® Sampling

The HydroPunch II® sampling device is designed to be pushed or driven to the desired sample depth, either from the ground surface or from the bottom of a drilled borehole, similar to a split-barrel sampler. The HydroPunch® utilizes an air-tight and water-tight sealed intake screen and sample chamber, which is isolated from the surrounding environment as the tool is advanced. The surface of the HydroPunch® is designed to prevent the downward transport of contamination as the tool is advanced; it cleans itself as the soil particles are displaced to the side. The tight seal which is created as the soil is displaced and compacted allows the collection of a discrete sample from a specific depth.

The HydroPunch® can be used to sample both groundwater and floating free product. Groundwater samples will be collected from the groundwater table to 45 feet below the groundwater table at 5-foot intervals at six locations using the HydroPunch® sampling apparatus. These six HydroPunch® samples will be taken in an upgradient (background) area (two samples), within the defined free-phase plume (two samples), and in the area immediately adjacent to the free-phase plume on the downgradient side (two samples). HydroPunch® provides 1.2 liters of sample volume, which should be sufficient for the water quality analyses detailed in Table 3.1. Should the sample

volume prove to be insufficient, the analytical protocol will be modified based on sample yield at each depth interval. Three additional HydroPunch® groundwater samples will be collected from the dissolved-phase plume located downgradient of the free-phase source area. These samples will be collected near the groundwater table (from 5 feet or more below the water table surface) and will be analyzed according to the analytical protocol listed in Table 3.1. These additional samples are necessary to help define the extent of the dissolved-phase BTEX plume and to allow the calculation of the anaerobic decay constant. These data will also aid in calibration of the Bioplume II® model for the site.

3.2.1.2 Existing Monitoring Well Sampling

Existing groundwater monitoring wells both upgradient and downgradient of the free-phase plume and the dissolved-phase plume will also be sampled. The following 12 wells will be sampled to facilitate Bioplume II® model calibration: MW-02-026 and MW-02-027 (background); MW-02-007 and MW-02--013 (within free-phase plume); MW-02-019, MW-02-020, and MW-02-030 (downgradient of free-phase plume); and MW-02-021, MW-02-040, MW-02-041, MW-02-042, and MW-02-043 (downgradient of the dissolved-phase plume).

3.2.2 Preparation for Sampling

All equipment to be used for sampling will be assembled and properly cleaned and calibrated (if required) prior to arriving in the field. In addition, all record-keeping materials will be gathered prior to leaving the office.

3.2.2.1 Equipment Cleaning

All portions of sampling and test equipment that will contact the sample matrix will be thoroughly cleaned before use. This includes the HydroPunch® tool, water-level probe and cable, lifting line, test equipment for onsite use, and other equipment or portions thereof which will contact the samples. Based on the types of sample analyses to be conducted, the following cleaning protocol will be used:

- Clean with potable water and phosphate-free laboratory detergent (HP-II detergent solutions, as appropriate);
- Rinse with potable water;
- Rinse with distilled or deionized water;
- Rinse with reagent-grade methanol;
- Air dry the equipment prior to use.

Any deviations from these procedures will be documented in the field scientist's field notebook and on the groundwater sampling form.

If pre-cleaned dedicated sampling equipment is used, the cleaning protocol specified above will not be required. The EPA laboratory-supplied sample containers will be cleaned and sealed by the laboratory and therefore will not need to be cleaned in the field. The type of container provided and the method of container decontamination will be documented in the EPA's permanent record of the sampling event.

3.2.2.2 Equipment Calibration

As required, field analytical equipment will be calibrated according to the manufacturer's specifications prior to field use. This applies to equipment used for onsite measurements of pH, electrical conductivity, and temperature.

3.2.3 Sampling Procedures

Special care will be taken to prevent contamination of the groundwater and extracted samples. The two primary ways in which sample contamination can occur are through contact with improperly cleaned equipment and by cross-contamination through insufficient cleaning of equipment between wells. To prevent such contamination, the water level probe and cable used to determine static water levels and well total depths will be thoroughly cleaned before and after field use and between uses at different sampling locations according to the procedures presented in Section 3.2.2.1. In addition to the use of properly cleaned equipment, a clean pair of new, disposable nitrile gloves will be worn each time a different well is sampled.

The following paragraphs present the procedures to be followed for groundwater sample collection from the HydroPunch® and groundwater monitoring wells. These activities will be performed in the order presented below. Exceptions to this procedure will be noted in the field scientist's field notebook.

3.2.3.1 HydroPunch® Groundwater Sampling

3.2.3.1.1 Sampling Interval and Method

The sampling depth and interval will be specified prior to driving the HydroPunch® into the ground. The ES field hydrogeologist will verify the sampling depth by measuring the length of each HydroPunch® sampling rod prior to insertion into the ground. After insertion, the drive rods or hammer will be pulled back to pull the cone out of the body of the HydroPunch® device, permitting groundwater to enter. A minimum of 6 inches of the body of the device must be in the driven hole to provide a good annular seal.

3.2.3.1.2 Preparation of Location

Prior to starting the sampling procedure, the area around the hole will be cleared of foreign materials, such as brush, rocks, and debris. This will prevent sampling equipment from inadvertently contacting foreign materials near the sampling point.

3.2.3.1.3 Water Level and Total Depth Measurements

Prior to removing any water from the HydroPunch® sampling device, the static water will be measured. A manometer with hollow high-density polyethylene (HDPE) tubing will be inserted into the hollow HydroPunch® device through which the groundwater sample will be acquired until the manometer indicates that groundwater has been reached. The HDPE to be attached to the manometer will then be marked at the level of the ground surface and removed from the ground. The depth to water will be determined by placing a tape measure next to the HDPE tubing and measuring the length from the base of the tubing to the ground level mark to the nearest 0.1 foot. The sampling depth will be measured to the nearest 0.1 foot by noting the depth to which the HydroPunch® tool was driven.

3.2.3.1.4 Sample Extraction

Allowing for adequate fill time, the HydroPunch® sampling device will be pulled to the surface, unthreaded from the upper subassembly, and replaced with the thread retainer. The sample will be transferred directly into the analyte-appropriate sample container. The water will be carefully poured down the inner walls of the sample bottle to minimize aeration of the sample.

Unless other instructions are given by the analytical laboratory, sample containers will be completely filled so that no air space remains in the container. Excess water collected during sampling does not require special handling, per Plattsburgh AFB.

3.2.3.2 Groundwater Monitoring Well Sampling

3.2.3.2.1 Preparation of Location

Prior to starting the sampling procedure, the area around the existing well will be cleared of foreign materials, such as brush, rocks, and debris. These procedures will prevent sampling equipment from inadvertently contacting debris around the monitoring well.

3.2.3.2.2 Water Level and Total Depth Measurements

Prior to removing any water from the existing well, the static water level will be measured. An electrical water level probe will be used to measure the depth to groundwater below the datum to the nearest 0.01 foot. After measuring the static water level, the water level probe will be slowly lowered to the bottom of the well and the total well depth will be measured to the nearest 0.01 foot. Based on these measurements, the volume of water to be purged from the well will be calculated. If free-phase product is encountered, attempts will be made to sample both within and below the oil lens.

3.2.3.2.3 Well Purging

The volume of water contained within the well casing at the time of sampling will be calculated, and three times the calculated volume will be removed from the well. All purge water will be placed in 55-gallon drums and disposed of according to Plattsburgh AFB procedures, as appropriate. The empty drums will be rinsed with hot water and returned to base personnel for reuse. Dedicated disposable bailers will be used for well purging.

If a well is evacuated to a dry state during purging, the well will be allowed to recharge, and the sample will be collected as soon as sufficient water is present in the well to obtain the necessary sample quantity. Sample compositing, or sampling over a lengthy period by accumulating small volumes of water at different times to obtain a sample of sufficient volume, will not be allowed.

3.2.3.2.4 Sample Extraction

Dedicated, disposable, polyethylene bailers will be used to extract groundwater samples from the well. The bailer will be lowered into the water gently to prevent splashing and extracted gently to prevent creation of an excessive vacuum in the well. The sample will be transferred directly into the appropriate sample container. The

water sample will be transferred from the bailer by discharging the sample from the bottom. The water will be carefully poured down the inner walls of the sample bottle to minimize aeration of the sample.

Unless other instructions are given by the analytical laboratory, sample containers will be completely filled so that no air space remains in the container. Excess water collected during sampling will be placed into the 55-gallon drums used for well purge waters and disposed of according to Plattsburgh AFB procedures, as appropriate.

3.2.4 Onsite Groundwater Parameter Measurement

The following sections describe the procedures to be used to analyze groundwater samples from both the HydroPunch® and existing groundwater monitoring wells at Site FT-002.

3.2.4.1 Dissolved Oxygen Measurements

Except where the USEPA can obtain dissolved oxygen (DO) measurements from collected groundwater samples, DO measurements will be taken using a meter with a downhole oxygen sensor. DO measurements will be taken immediately following groundwater sample acquisition. When DO measurements will be taken in HydroPunch® holes or wells that have not yet been sampled, the HydroPunch® hole or existing well will be purged as described in Section 3.2.3.2.3 prior to taking the DO measurement.

3.2.4.2 pH, Temperature, and Specific Conductance

Because the pH, temperature, and specific conductance of a groundwater sample can change significantly within a short time following sample acquisition, these parameters will be measured in the field in unfiltered, unpreserved, "fresh" water collected by the same technique as the samples taken for laboratory analyses. The measurements will be made in a clean glass container separate from those intended for laboratory analysis, and the measured values will be recorded in the groundwater sampling record.

3.2.5 Sample Handling

This section describes the handling of samples from the time of sampling until the samples arrive at the laboratory.

3.2.5.1 Sample Preservation

The USEPA analytical support personnel will add any necessary chemical preservatives prior to shipping the containers to the site. Samples will be properly prepared for transportation to the USEPA laboratory by placing the samples in a cooler containing ice to maintain a shipping temperature of 4 degrees centigrade (°C).

3.2.5.2 Sample Container and Labels

Sample containers and appropriate container lids will be provided by the USEPA. The sample containers will be filled as described in Sections 3.2.3.1.4 and 3.2.3.2.4 and the container lids will be tightly closed. The sample label will be firmly attached to the container side, and the following information will be legibly and indelibly written on the label:

- Facility name;
- Sample identification;
- Sample type (e.g., groundwater);
- Sampling date;
- Sampling time;
- Preservatives added; and
- Sample collector's initials.

3.2.5.3 Sample Shipment

After the samples are sealed and labeled, they will be packaged for transport to the USEPA laboratory. The following packaging and labeling procedures will be followed:

- Package sample so that it will not leak, spill, or vaporize from its container; and
- Label container with
 - Sample collector's name, address, and telephone number;
 - Laboratory's name, address, and telephone number;
 - Description of sample;
 - Quantity of sample; and
 - Date of shipment.

The packaged samples will be delivered by ES or ARA personnel to the USEPA laboratory. Delivery will occur shortly after sample acquisition.

3.2.5.4 Chain-of-Custody Control

After the samples have been collected, chain-of-custody procedures will be followed to establish a written record of sample handling and movement between the sampling site and the USEPA laboratory. Each shipping container will have a chain-of-custody form completed in triplicate by the sampling personnel. One copy of this form will be kept by the sampling contractor after sample delivery to the analytical laboratory, and the other two copies will be retained at the laboratory. One of the laboratory copies will become a part of the permanent record for the sample and will be returned with the sample analytical results. The chain-of-custody will contain the following information:

- Sample identification number;
- Sample collector's printed name and signature;
- Date and time of collection;
- Place and address of collection;
- Sample matrix;
- Chemical preservatives added;

- Analyses requested;
- Signatures of individuals involved in the chain of possession; and
- Inclusive dates of possession.

The chain-of-custody documentation will be placed inside the shipping container so that it will be immediately apparent to the laboratory personnel receiving the container, but will not be damaged or lost during transport. The shipping container will be sealed so that it will be obvious if the seal has been tampered with or broken.

3.2.5.5 Sampling Records

In order to provide complete documentation of the sampling event, detailed records will be maintained by the field hydrogeologist. At a minimum, these records will include the following information:

- Sample location (facility name);
- Sample identification;
- Sample location map or detailed sketch;
- Date and time of sampling;
- Sampling method;
- Field observations of
 - Sample appearance,
 - Sample odor,
- Weather conditions;
- Water level prior to purging;
- Total well depth;
- Purge volume;
- Water level after purging;
- Well condition;
- Sampler's identification;
- Field measurements of pH, temperature, DO, and specific conductivity; and
- Any other relevant information.

Groundwater sampling information will be recorded on a groundwater sampling form. Figure 3.1 at the end of this section shows an example of the groundwater sampling record.

3.2.6 Laboratory Analyses

Laboratory analyses will be performed on all groundwater samples and the QA/QC samples described in Section 5. The analytical methods for this sampling event are listed in Table 3.1. Prior to sampling, arrangements will be made with USEPA

analytical support personnel who will be on site during field activities to provide a sufficient number of appropriate sample containers for the samples to be collected. All containers, preservatives, and shipping requirements will be consistent with USEPA protocol or those reported in Appendix A of this plan.

USEPA analytical support personnel will specify the necessary QC samples and notify the laboratory to prepare appropriate QC sample bottles. For samples requiring chemical preservation, preservatives will be added to containers by the laboratory prior to transportation. Containers, ice chests with adequate padding, and cooling media may be sent by the laboratory to the site. Sampling personnel will fill the sample containers and return the samples to the laboratory.

3.3 SOIL CORE SAMPLING AND ANALYSIS

The third stage of field work to be completed at Site FT-002 will involve coring the suspected area of the free-phase plume from approximately 4 feet above the free-phase to approximately 4 feet below the free-phase to verify/validate the CPT and soil gas data. These soil cores will be located near the CPT/soil gas sampling locations to allow data comparison and verification. ARA will provide the equipment and personnel necessary to complete this activity during the period of December 7 through 10, 1993. Fifty-foot resolution of soil cores for verification purposes will be considered sufficient for the intrinsic remediation demonstration for Site FT-002.

A Gouda Soil Sampler® may be employed at the site to collect "undisturbed" soil samples at any desired depth within the range of the driving apparatus (see Section 3.1). The sampler penetrates the soil, while the Gouda Soil Sampler® cone is in position, and prevents soil substances from entering the sampling tube. When the sampler has been pushed to the depth at which the soil sample is to be taken, the section of the sampler tubing extending above the ground is withdrawn approximately 26 centimeters (cm), thus blocking the cone in the upper position. The sampler is then pushed into the soil approximately 24 cm, and pulled up to the ground surface as quickly as possible.

A Mostap-35® device may also be used to collect soil samples. The Mostap apparatus is pushed to the preferred depth, and then unlocked to cut a complete soil sample. The sampling apparatus is then withdrawn.

If the sampling techniques described above are not appropriate for the characterization of Site FT-002, continuous soil samples will be obtained using a CME® split-barrel, continuous sampling device or another similar method judged acceptable by the ES field hydrogeologist. Soil samples will be collected continuously over the full depth of the soil borehole unless an alternative sampling frequency is requested by the ES field hydrogeologist. Procedures will be modified, if necessary, to ensure good sample recovery. The soil samples collected will be removed from the continuous sampler and placed on clean aluminum foil for logging.

A portion of each soil sample will be placed in a clean glass jar for photoionization detector (PID) headspace measurements for VOCs. Representative portions of the soil samples collected for the headspace procedure will be quickly transferred to clean glass jars, sealed with aluminum foil, and held for 15 minutes at an ambient temperature.

Measurements will be made by puncturing the aluminum foil seal with the PID probe and reading the concentration of the headspace gases. The PID relates the concentration of total VOCs in the sample to an isobutylene calibration standard. It is anticipated that headspace measurements will be performed on all samples collected. The PID will also be used to monitor the worker breathing zone.

The ES field hydrogeologist will be responsible for observing all field investigation activities, maintaining a detailed descriptive log of all subsurface materials recovered, photographing representative samples, and properly labeling and storing samples. An example of the proposed geologic boring log form is presented in Figure 3.2 at the end of this section. The descriptive log may contain:

- Sample interval (top and bottom depth);
- Sample recovery;
- Presence or absence of contamination;
- Lithologic description, including relative density, color, major textural constituents, minor constituents, porosity, relative moisture content, plasticity of fines, cohesiveness, grain size, structure or stratification, relative permeability, and any other significant observations; and
- Depths of lithologic contacts and/or significant textural changes will be measured and recorded to the nearest 0.1 foot.

The purpose of the soil corings is to verify/validate the LIF CPT and soil gas data. Site hydrogeologic characterization of Site FT-002 already has been accomplished.

Although soil cuttings should be very minimal, soil cuttings exhibiting petroleum hydrocarbon or solvent contamination based on PID screening will be drummed and stored onsite during the sampling operations. Any drummed material will be transferred to Plattsburgh AFB for disposition, as necessary.

3.3.1 Borings Location and Datum Survey

The location of and other relevant site information for the soil corings taken for verification purposes will be recovered by the ES field hydrogeologist. The horizontal location will be measured relative to established Plattsburgh AFB coordinates. Horizontal coordinates will be measured to the nearest 0.01 foot. Vertical location of the ground surface relative to the measurement datum will also be measured relative to USGS mean sea level data. The ground surface elevation will be measured to the nearest 0.1 foot, and the measurement datum will be measured to the nearest 0.01 foot.

3.3.2 Site Restoration

After sampling is complete, each soil coring site will be restored as close to its original condition as possible. Although soil cuttings should be very minimal, any clean soil cuttings brought to the surface will be placed in 55-gallon drums for disposition by Plattsburgh AFB personnel, as necessary.

Figure 3.1
Groundwater Sampling Log

SAMPLING LOCATION _____
SAMPLING DATE(S) _____

GROUND WATER SAMPLING RECORD - MONITORING WELL _____
(number)

REASON FOR SAMPLING: ☐ Regular Sampling; ☐ Special Sampling;
DATE AND TIME OF SAMPLING: _____, 19____ a.m./p.m.
SAMPLE COLLECTED BY: _____ of _____
WEATHER: _____
DATUM FOR WATER DEPTH MEASUREMENT (Describe): _____

MONITORING WELL CONDITION:

☐ LOCKED: ☐ UNLOCKED
WELL NUMBER (IS - IS NOT) APPARENT _____
STEEL CASING CONDITION IS: _____
INNER PVC CASING CONDITION IS: _____
WATER DEPTH MEASUREMENT DATUM (IS - IS NOT) APPARENT _____
☐ DEFICIENCIES CORRECTED BY SAMPLE COLLECTOR
☐ MONITORING WELL REQUIRED REPAIR (describe): _____

Check-off

- 1 ☐ EQUIPMENT CLEANED BEFORE USE WITH _____
Items Cleaned (List): _____

- 2 ☐ WATER DEPTH _____ FT. BELOW DATUM
Measured with: _____
- 3 ☐ WATER-CONDITION BEFORE WELL EVACUATION (Describe):
Appearance: _____
Odor: _____
Other Comments: _____
- 4 ☐ WELL EVACUATION:
Method: _____
Volume Removed: _____
Observations: Water (slightly - very) cloudy
Water level (rose - fell - no change)
Water odors: _____
Other comments: _____

5 [] SAMPLE EXTRACTION METHOD:

[] Bailer made of: _____
[] Pump, type: _____
[] Other, describe: _____

Sample obtained is [] GRAB; [] COMPOSITE SAMPLE

6 [] ON-SITE MEASUREMENTS:

Temp: _____ ° _____ Measured with: _____
pH: _____ Measured with: _____
Conductivity: _____ Measured with: _____
Other: _____

7 [] SAMPLE CONTAINERS (material, number, size): _____

8 [] ON-SITE SAMPLE TREATMENT:

[] Filtration: Method _____ Containers: _____
Method _____ Containers: _____
Method _____ Containers: _____

[] Preservatives added:
Method _____ Containers: _____
Method _____ Containers: _____
Method _____ Containers: _____
Method _____ Containers: _____

9 [] CONTAINER HANDLING:

[] Container Sides Labeled
[] Container Lids Taped
[] Containers Placed in Ice Chest

10 [] OTHER COMMENTS: _____

BOREHOLE LOG

SITE NAME AND LOCATION				DRILLING METHOD:					BORING NO.					
				SAMPLING METHOD:					SHEET					
									OF					
									DRILLING					
				WATER LEVEL		START		FINISH						
				TIME		TIME		TIME						
				DATE		DATE		DATE						
				CASING DEPTH		DATE		DATE						
ELEVATION														
SURFACE CONDITIONS														
BEARING														
SAMPLE HAMMER TORQUE				FT.-LBS										
DEPTH (ELEVATION)	BLOWS/ MIN. ON SAMPLER (RECOVERY)	CORES				SOIL DESCRIPTION OR ROCK LITHOLOGY	SYMBOL	ROCK STRUCTURE	SAMPLER AND BIT	CASING TYPE	BLOWS/FOOT ON CASING	TEST RESULTS		
		RUN NO.	NO. AND SIZE OF CORE PIECES	% RECOVERY	ROD							DEPTH IN FEET	PERMEABILITY CM./SEC.	
FROM	TO													

DRILLING CONTR

LOGGED BY _____
 DATE _____ CHK'D BY _____
 RL

Figure 3.2
Geologic Boring Log

SECTION 4

REMEDIAL OPTION EVALUATION AND EE/CA REPORT

Upon completion of field work, the Bioplume II® numerical groundwater model will be used to determine the fate and transport of fuel hydrocarbons and chlorinated solvents dissolved in groundwater at the site. Based upon model predictions of contaminant concentration and distribution through time, and upon potential exposure pathways, the potential risk to human health and the environment will be assessed. If it is shown that natural attenuation of BTEX compounds and/or chlorinated solvents is sufficient to reduce the potential risk to human health and the environment to acceptable levels, ES will recommend implementation of the natural attenuation coupled with long-term monitoring remedial option. If natural attenuation is chosen, ES will prepare a site-specific, long-term monitoring plan which will specify the location of point-of-compliance monitoring wells and sampling frequencies.

If the natural attenuation remedial option is deemed inappropriate for use at this site, institutional controls such as groundwater or land use restrictions will be evaluated to determine if they will be sufficient to reduce the risk to human health and the environment to acceptable levels. If institutional controls are inappropriate, remedial options which could reduce risks to acceptable levels will be evaluated and the most appropriate remedial options recommended. Potential remedial options include, but are not limited to, free-product recovery, groundwater pump-and-treat, enhanced biological treatment, bioventing, air sparging, and *in situ* reactive barrier walls. The reduction in dissolved BTEX that should result from remedial activities will be used to produce a new input file for the Bioplume II® model. The model will then be used to predict the BTEX plume (and risk) reduction that should result from remedial actions.

Upon completion of Bioplume II® modeling and remedial option selection, a report detailing the results of the modeling and remedial option selection will be prepared. This report will follow the outline presented in Figure 4.1 and will contain an introduction, site description, identification of remediation objectives, description of remediation alternatives, an analysis of remediation alternatives, and the recommended remedial approach. This report will also contain the results of the site characterization activities described herein and a description of the Bioplume II® model developed for this site.

FIGURE 4.1

EXAMPLE EE/CA REPORT OUTLINE

INTRODUCTION

SITE DESCRIPTION

- Background
- Soil and Groundwater Characteristics
- Site Contamination

IDENTIFICATION OF REMEDIATION OBJECTIVES

- Potential Pathways for Human/Ecological Contact
- Chemical-Specific Applicable or Relevant and Appropriate Requirements (ARARs.)

DESCRIPTION OF REMEDIATION ALTERNATIVES

- Natural Attenuation/Long-Term Monitoring
- Alternative 2 (Site Specific)
- Alternative 3 (Site Specific)

ANALYSIS OF REMEDIATION ALTERNATIVES

- Protectiveness (BioPlume® Model Results & Discussion)
- Implementability
 - *Technical*
 - *Administrative (Political)*
- Cost
 - *Capital Costs*
 - *Operating Costs*
 - *Present Worth Cost*

RECOMMENDED REMEDIATION APPROACH

How does the recommended technology offer adequate protection for less cost.

APPENDIX A: Supporting Data and Documentation

APPENDIX B: Site Specific BioPlume II® Model Input and Results

SECTION 5

QUALITY ASSURANCE/QUALITY CONTROL

Field QA/QC procedures will include collection of field duplicates and rinseate, field and trip blanks; decontamination of the water level probe and cable; use of analyte appropriate containers; and chain-of-custody procedures for sample handling and tracking. All samples to be transferred to the USEPA for analysis will be clearly labeled to indicate sample number, location, matrix (e.g., groundwater), and analyses requested. Samples will be preserved in accordance with the analytical methods to be used, and water sample containers will be packaged in coolers with ice to maintain a temperature of 4 °C.

All field sampling activities will be recorded in a bound, sequentially paginated field notebook in permanent ink. All sample collection entries will include the date, time, sample locations and numbers, notations of field observations, and the sampler's name and signature. Field QC samples will be collected in accordance with the program described below, and as summarized in Table 5.1.

QA/QC sampling will include collection and analysis of duplicate samples, rinseate blanks, field/trip blanks, and matrix spike samples. Internal laboratory QC analyses will involve laboratory control samples (LCSs) and laboratory method blanks (LMBs). QA/QC objectives for each of these samples, blanks, and spikes are described below.

HydroPunch® groundwater samples should provide sufficient volume for some duplicate analysis. Refer to Table 3.1 for further details on volume requirements.

One rinseate sample will be collected for every 10 or less groundwater samples collected from existing wells. Because disposable bailers may be used for this sampling event, the rinseate sample will consist of a sample of distilled water poured into a bailer and subsequently transferred into a sample container provided by the laboratory. Rinseate samples will be analyzed for VOCs only.

A field blank will be collected for every 20 or less groundwater samples (both from HydroPunch® and existing well sampling events) to assess the effects of ambient conditions in the field. The field blank will consist of a sample of distilled water poured into a laboratory-supplied sample container while sampling activities are underway. The field blank will be analyzed for VOCs.

A trip blank will be analyzed to assess the effects of ambient conditions and conditions on sampling results during the transportation of samples. The trip blank will be prepared by the laboratory and will be transported inside one of the coolers containing samples. This sample will be analyzed for VOCs.

TABLE 5.1
FIELD QA/QC SAMPLE PROGRAM
PLATTSBURGH AFB

QA/QC Sample Types	Frequency Collected and/or Analyzed	Analytical Methods
Duplicates	2 Samples (10%)	VOCs
Rinseate Blanks	2 Samples (10%)	VOCs
Field Blanks	1 Sample (5%)	VOCs
Trip Blanks	One per shipping cooler	VOCs
Matrix Spike Samples	Once per sampling event	VOCs
Laboratory Control Sample	Once per method per medium	Laboratory Control Charts (Method Specific)
Laboratory Method Blanks	Once per method per medium	Laboratory Control Charts (Method Specific)

Matrix spikes will be prepared in the laboratory and used to establish matrix effects for samples analyzed for VOCs.

LCSs and LMBs will be prepared internally by the laboratory and will be analyzed each day samples from the site are analyzed. Samples will be re-analyzed in cases where the LCS or LMB are out of the control limits. Control charts for LCSs and LMBs will be developed by the laboratory and monitored for the analytical methods used.

SECTION 6

REFERENCES

- ABB Environmental Services, Inc., and URS Consultants, Inc., 1993. Draft Final FT-002 Groundwater Remedial Investigation Report: Plattsburgh Air Force Base, Plattsburgh, New York. May.
- Alvarez, P.J.J., and Vogel, T.M., 1991, Substrate interactions of benzene, toluene, and para-xylene during microbial degradation by pure cultures and mixed culture aquifer slurries: *Applied Environmental Microbiology*, v. 57, p. 2981-2985.
- Atlas, R.M., 1988, *Microbiology - Fundamentals and Applications*: Macmillan, New York.
- Borden, R.C. and P.B. Bedient. 1986. Transport of Dissolved Hydrocarbons Influenced by Oxygen Limited Biodegradation - Theoretical Development. *Water Resources Research*, 22 (13) 1973-1982.
- Bruce, L., Miller, T., and Hockman, B., 1991, Solubility versus equilibrium saturation of gasoline compounds - a method to estimate fuel/water partition coefficient using solubility or K_{oc} , In, A. Stanley, editor, NWWAI/API Conference on Petroleum Hydrocarbons in Groundwater: NWWA/API, p. 571-582.
- Davis, A., and R.L. Olsen, 1990. "Predicting the fate and transport of organic compounds in groundwater," *Hazardous Materials Control* 3(4):18.
- E.C. Jordan Co., 1989a. Installation Restoration Program (Remedial Investigation/Feasibility Study) at Plattsburgh Air Force Base, New York: Site Inspection Report. July.
- E.C. Jordan Co., 1989b. Installation Restoration Program (Remedial Investigation/Feasibility Study) at Plattsburgh Air Force Base, New York: Supplemental Field Investigation Technical Memorandum. August.
- E.C. Jordan Co., 1990. Installation Restoration Program at Plattsburgh Air Force Base, New York: Engineering Evaluation/Cost Analysis, Site FT-002 Free-Product Removal Action. December.
- E.C. Jordan Co., 1991a. Installation Restoration Program at Plattsburgh Air Force Base, New York: Sampling and Analysis Plan. February.
- E.C. Jordan Co., 1991b. Installation Restoration Program at Plattsburgh Air Force Base, New York: FT-002 Free-Product Recovery Pilot Test, Technical Memorandum. March.

- Engineering-Science, Inc., 1993. Health and Safety Plan for the Bioplume® Modeling Initiative. Prepared for the Air Force Center for Environmental Excellence, Environmental Restoration Division, USAF Contract F41624-92-D-8036.
- Freeze, R.A., and J.A. Cherry, 1979. Groundwater. New Jersey: Englewood Cliffs.
- Giese, G.L., and W.A. Hobba, 1970. "Water Resources of the Champlain-Upper Hudson Basins in New York State," New York State Office of Planning Coordination.
- Gibson, D.T., and Subramanian, V., 1984, Microbial degradation of aromatic hydrocarbons, In, D.T. Gibson, editor, Microbial Degradation of Organic Compounds: Marcel-Dekker, New York, p. 181-252.
- Higgins, I.J., and Gilbert, P.D., 1978, The biodegradation of hydrocarbons, In, K.W.A. Chator and H.J. Somerville, editors, The Oil Industry and Microbial Ecosystems: Heyden and Sons, London, p. 80-114.
- Howard, Philip H., 1990. Handbook of Environmental Fate and Exposure Data for Organic Chemicals. Chelsea, Michigan: Lewis Publishers.
- Jamison, V.W., Raymond, R.L., and Hudson, J.O. Jr., 1975, Biodegradation of high-octane gasoline in groundwater: Developments in Industrial Microbiology, v. 16.
- Lee, M.D. 1988. Biorestitution of Aquifers Contaminated with Organic Compounds. CRC Critical Reviews in Environmental Control. Vol 18. pp 29-89.
- Malone, D.R., Kao, C.M., and Borden, R.C., 1993, Dissolution and biorestitution of nonaqueous phase hydrocarbons - model development and laboratory evaluation: Water Resources Research, v. 29, no. 7, p. 2203-2213.
- McCarty, P.L., Reinhard, M., and Rittman, B.E. 1981. Trace Organics in Groundwater. Environmental Science and Technology 15:40-51.
- Radian Corporation, 1985. Installation Restoration Program - Phase I: Records Search Plattsburgh AFB, New York. April.
- Rifai, H.S., Bedient, P.B., Wilson, J.T., Miller, K.M., and Armstrong, J.M., 1988, Biodegradation modeling at aviation fuel spill site: Journal of Environmental Engineering, v. 114, no. 5, p. 1007-1029.
- U.S. Environmental Protection Agency, 1989. Seminar Publication: Transport and Fate of Contaminants in the Subsurface. Center for Environmental Research Information. EPA/625/4-89/019 (September).
- Young, L.Y., 1984, Anaerobic degradation of aromatic compounds, In, D.R. Gibson, editor, Microbial Degradation of Aromatic Compounds: Marcel-Dekker, New York.

APPENDIX A

**CONTAINERS, PRESERVATIVES, PACKAGING, AND SHIPPING
REQUIREMENTS FOR GROUND WATER SAMPLES**

Table 8.2a: Containers, Preservation, Packaging, and Shipping Requirements
for ASC Ground-Water Samples

Analysis	Bottles and Jars	Preservation	Holding Time	Volume of Sample	Shipping	Normal Packaging
<u>GROUND WATER</u>						
<u>Low Concentration (ICL Organics)</u>						
ICL VOCs	Two 40-ml vials with Teflon-lined caps	Cool to 4°C	10 days	Fill completely	Delivered daily	Bubble pack
ICL Semivolatiles	Two 1-liter glass bottles with Teflon-lined lids	Cool to 4°C	5 days until extraction, 40 days after extraction	Fill 90% full	Delivered daily	Bubble pack
ICL Pesticides/PCBs	Two 1-liter amber glass bottles with Teflon-lined lids	Cool to 4°C	5 days until extraction, 40 days after extraction	Fill 75% full	Delivered daily	Bubble pack
PCDDs/PCDFs	Two 1-liter amber glass bottles with Teflon-lined lids	Cool to 4°C	30 days until extraction, 45 days after extraction	Fill 90% full	Delivered daily	Bubble Pack
Herbicides	Two 1-liter amber glass bottles with Teflon-lined lids	Cool to 4°C	7 days to extraction, 30 days after extraction	Fill 90% full	Delivered daily	Bubble Pack
Carbamates	Two 1-liter amber glass bottles with Teflon-lined lids	Cool to 4°C	28 days	Fill 90% full	Delivered daily	Bubble Pack
Ethylene dibromide	Two 40-ml vials with Teflon-lined caps	Cool to 4°C	5 days	Fill completely	Delivered daily	Bubble Pack
Ethylene glycol	Two 40-ml vials with Teflon-lined caps	Cool to 4°C	14 days	Fill completely	Delivered daily	Bubble Pack
<u>Low Concentration (ICL Inorganics)</u>						
ICL Metals	One 1-liter polyethylene bottle	Filter immediately, HNO ₃ to pH <2, cool to 4°C	6 months except Hg 28 days	Fill 90% full	Delivered daily	Bubble pack

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Table D.2a: (continued)
(Page 2 of 5)

Analysis	Bottles and Jars	Preservation	Holding Time	Volume of Sample	Shipping	Normal Packaging
<u>Low Concentration (ICL Inorganics) continued</u>						
Cyanide	One 1-liter polyethylene bottle	Filter immediately, 0.6 g ascorbic acid NaOH to pH >12, cool to 4°C.	14 days	Fill 90% full	Delivered daily	Bubble pack
<u>Low Concentration (organics and inorganics)</u>						
Ammonia	One 1-liter polyethylene bottle	H ₂ SO ₄ to pH <2 Cool to 4°C	28 days	Fill 90% full	Delivered daily	Bubble pack
Boron	One 1-liter polyethylene bottle	Filter immediately, HNO ₃ to pH <2 Cool to 4°C	6 months	Fill 90% full	Delivered daily	Bubble pack
fluoride	One 1-liter polyethylene bottle	Filter immediately, Cool to 4°C	28 days	Fill 90% full	Delivered daily	Bubble pack
Sulfate	One 1-liter polyethylene bottle	Filter immediately, Cool to 4°C	28 days	Fill 90% full	Delivered daily	Bubble pack
Sulfide	One 1-liter polyethylene bottle	Filter immediately, Zinc acetate and sodium hydroxide to pH >9 Cool to 4°C	7 days	Fill 90% full	Delivered daily	Bubble pack
Chloride	One 1-liter polyethylene bottle	Filter immediately, Cool to 4°C	28 days	Fill 90% full	Delivered daily	Bubble pack
Bromide	One 1-liter polyethylene bottle	Filter immediately, Cool to 4°C	28 days	Fill 90% full	Delivered daily	Bubble pack
Nitrate/Nitrite	One 1-liter polyethylene bottle	Filter immediately, H ₂ SO ₄ to pH <2 Cool to 4°C	28 days	Fill 90% full	Delivered daily	Bubble pack
Alkalinity	One 1-liter polyethylene bottle	Cool to 4°C	14 days	Fill 90% full	Delivered daily	Bubble pack

100014115

Table B.2a: (continued)
(Page 3 of 5)

Analysis	Bottles and Jars	Preservation	Holding Time	Volume of Sample	Shipping	Normal Packaging
Total Phosphorus	One 1-liter polyethylene bottle	H ₂ SO ₄ to pH <2 Cool to 4°C	28 days	Fill 90% full	Delivered daily	Bubble pack
Total Organic Carbon	One 1-liter glass bottle	H ₂ SO ₄ to pH <2 Cool to 4°C	28 days	Fill completely	Delivered daily	Bubble pack
Total Organic Halides	Two 1-liter glass bottles	H ₂ SO ₄ to pH <2 0.008% Na ₂ S ₂ O ₃ if residual chlorine present, cool to 4°C	7 days	Fill completely	Delivered daily	Bubble pack
Chemical Oxygen Demand	One 1-liter polyethylene bottle	H ₂ SO ₄ to pH <2 Cool to 4°C	28 days	Fill 90% full	Delivered daily	Bubble pack
Biological Oxygen Demand	One 1-liter polyethylene bottle	Cool to 4°C	48 hours	Fill completely	Delivered daily	Bubble pack
Total Suspended Solids	One 1-liter polyethylene bottle	Cool to 4°C	7 days	Fill completely	Delivered daily	Bubble pack
Total Dissolved Solids	One 1-liter polyethylene bottle	Cool to 4°C	48 hours	Fill 90% full	Delivered daily	Bubble pack
Corrosivity	One 1-liter glass bottle	Cool to 4°C	28 days	Fill 90% full	Delivered daily	Bubble pack
pH	One 1-liter glass bottle	Cool to 4°C	28 days	Fill 90% full	Delivered daily	Bubble pack
Specific Conductance	One 1-liter polyethylene bottle	Cool to 4°C	28 days	Fill 90% full	Delivered daily	Bubble pack
Radionuclides:						
Gross alpha and beta	One 1-liter polyethylene bottle	Filter immediately, HNO ₃ to pH <2 Cool to 4°C	6 months	Fill 90% full	Delivered daily	Bubble pack
Gamma scan	One 1-liter polyethylene bottle	Filter immediately, HNO ₃ to pH <2 Cool to 4°C	6 months	Fill 90% full	Delivered daily	Bubble pack

100014116

Table 8.2a: (continued)
(Page 4 of 5)

Analysis	Bottles and Jars	Preservation	Holding Time	Volume of Sample	Shipping	Normal Packaging
Americium-241	One 1-liter polyethylene bottle	Filter immediately, HNO ₃ to pH <2 Cool to 4°C	6 months	Fill 90% Full	Delivered daily	Bubble pack
Plutonium-239/240	One 1-liter polyethylene bottle	Filter immediately, HNO ₃ to pH <2 Cool to 4°C	6 months	Fill 90% Full	Delivered daily	Bubble pack
Plutonium-241	One 1-liter polyethylene bottle	Filter immediately, HNO ₃ to pH <2 Cool to 4°C	6 months	Fill 90% Full	Delivered daily	Bubble pack
Strontium-90	One 1-liter polyethylene bottle	Filter immediately, HNO ₃ to pH <2 Cool to 4°C	6 months	Fill 90% Full	Delivered daily	Bubble pack
Tritium	One 40-ml vial with teflon lined cup	Filter immediately, Cool to 4°C	6 months	Fill 90% Full	Delivered daily	Bubble pack
Uranium-234	One 1-liter polyethylene bottle	Filter immediately, HNO ₃ to pH <2 Cool to 4°C	6 months	Fill 90% Full	Delivered daily	Bubble pack
Uranium-235	One 1-liter polyethylene bottle	Filter immediately, HNO ₃ to pH <2 Cool to 4°C	6 months	Fill 90% Full	Delivered daily	Bubble pack
Uranium-238	One 1-liter polyethylene bottle	Filter immediately, HNO ₃ to pH <2 Cool to 4°C	6 months	Fill 90% Full	Delivered daily	Bubble pack
Radium-226	One 1-liter polyethylene bottle	Filter immediately, HNO ₃ to pH <2 Cool to 4°C	6 months	Fill 90% Full	Delivered daily	Bubble pack
Radium-228	Two 1-liter polyethylene bottles	Filter immediately, HNO ₃ to pH <2 Cool to 4°C	6 months	Fill 90% Full	Delivered daily	Bubble pack

100014117

Table 8.2a: (continued)
(Page 5 of 5)

Analysis	Bottles and Jars	Preservation	Holding Time	Volume of Sample	Shipping	Normal Packaging
Thorium-232	One 1-liter polyethylene bottle	Filter immediately, HNO ₃ to pH <2 Cool to 4°C	6 months	Fill 90% Full	Delivered daily	Bubble pack

Note: Parameters with similar containers and preservation requirements may be combined

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APPENDIX B

AVAILABLE SOIL AND GROUNDWATER ANALYTICAL RESULTS

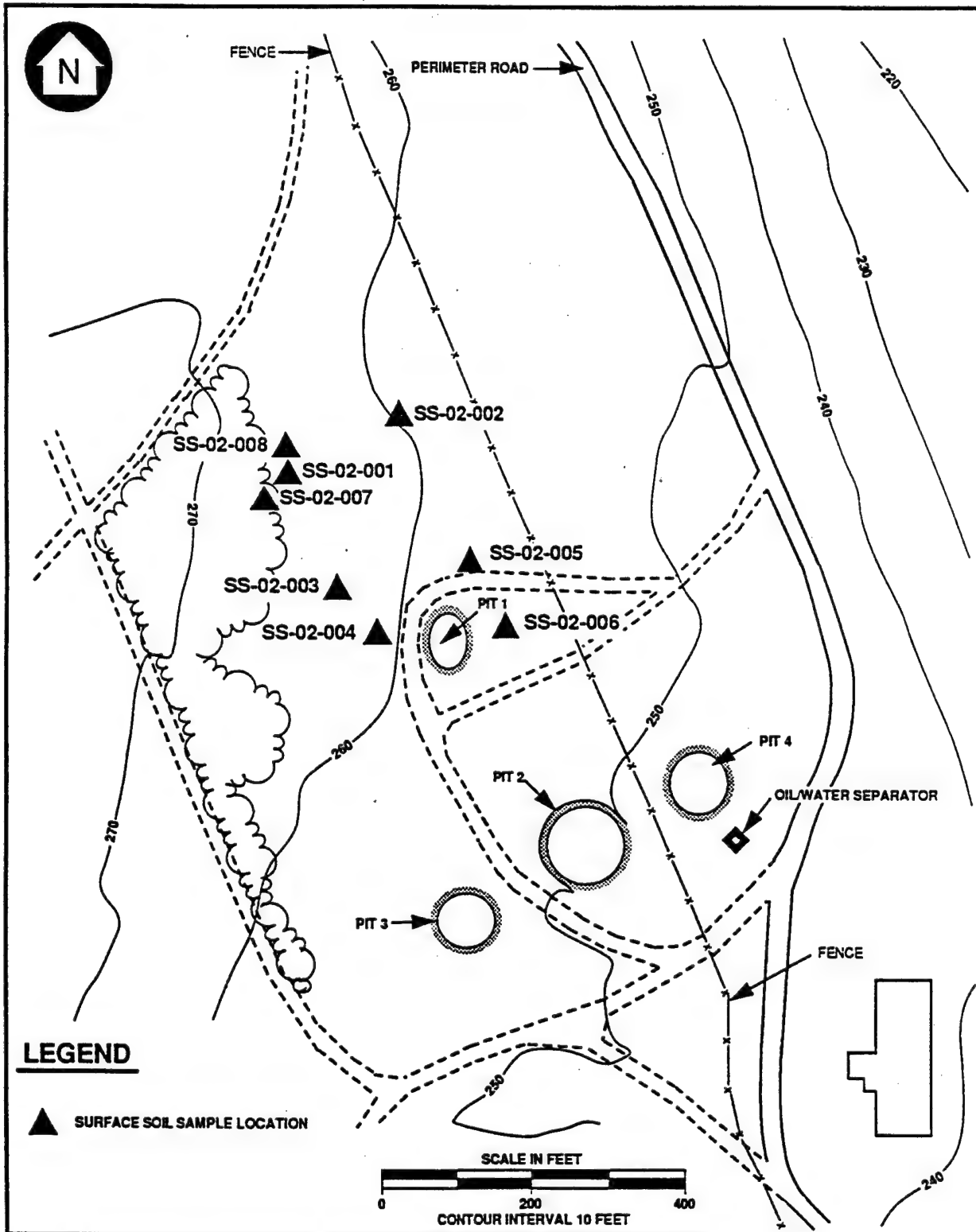


FIGURE 2-4: Phase I RI Surface Soil Sample Locations

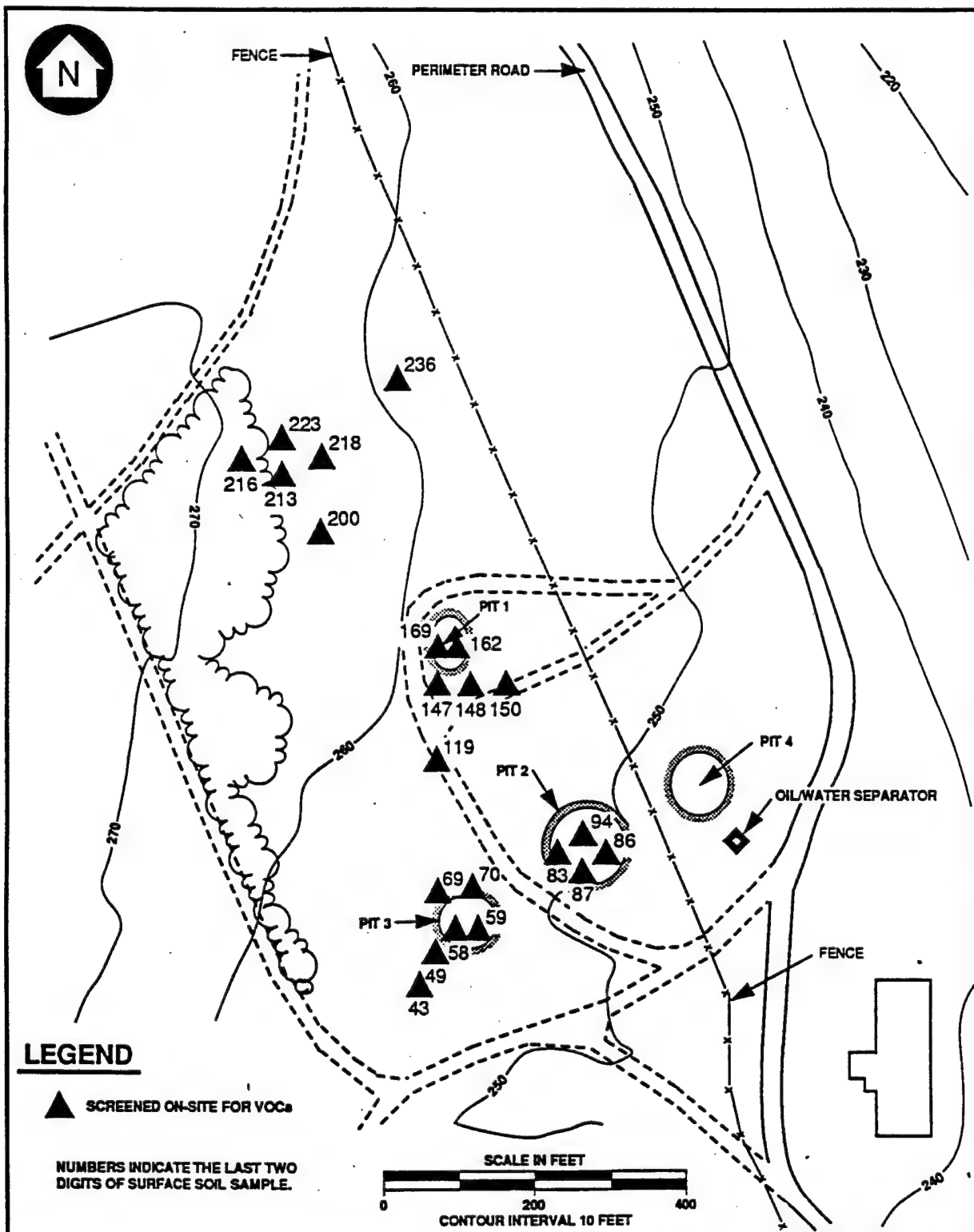


FIGURE 2-7: Phase II RI Surface Soil Samples Analyzed On-site for VOCs

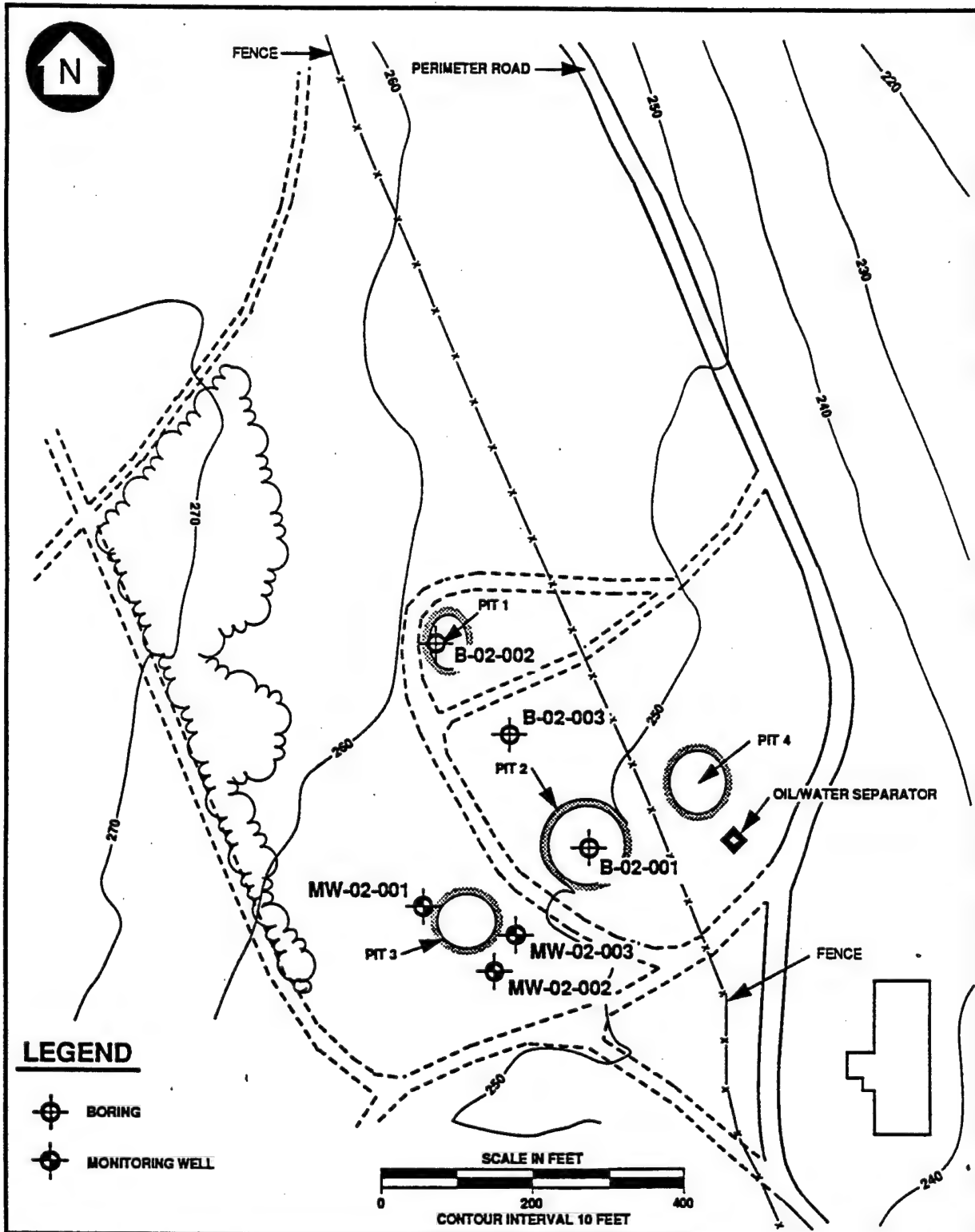


FIGURE 2-10: SI Subsurface Soil Explorations

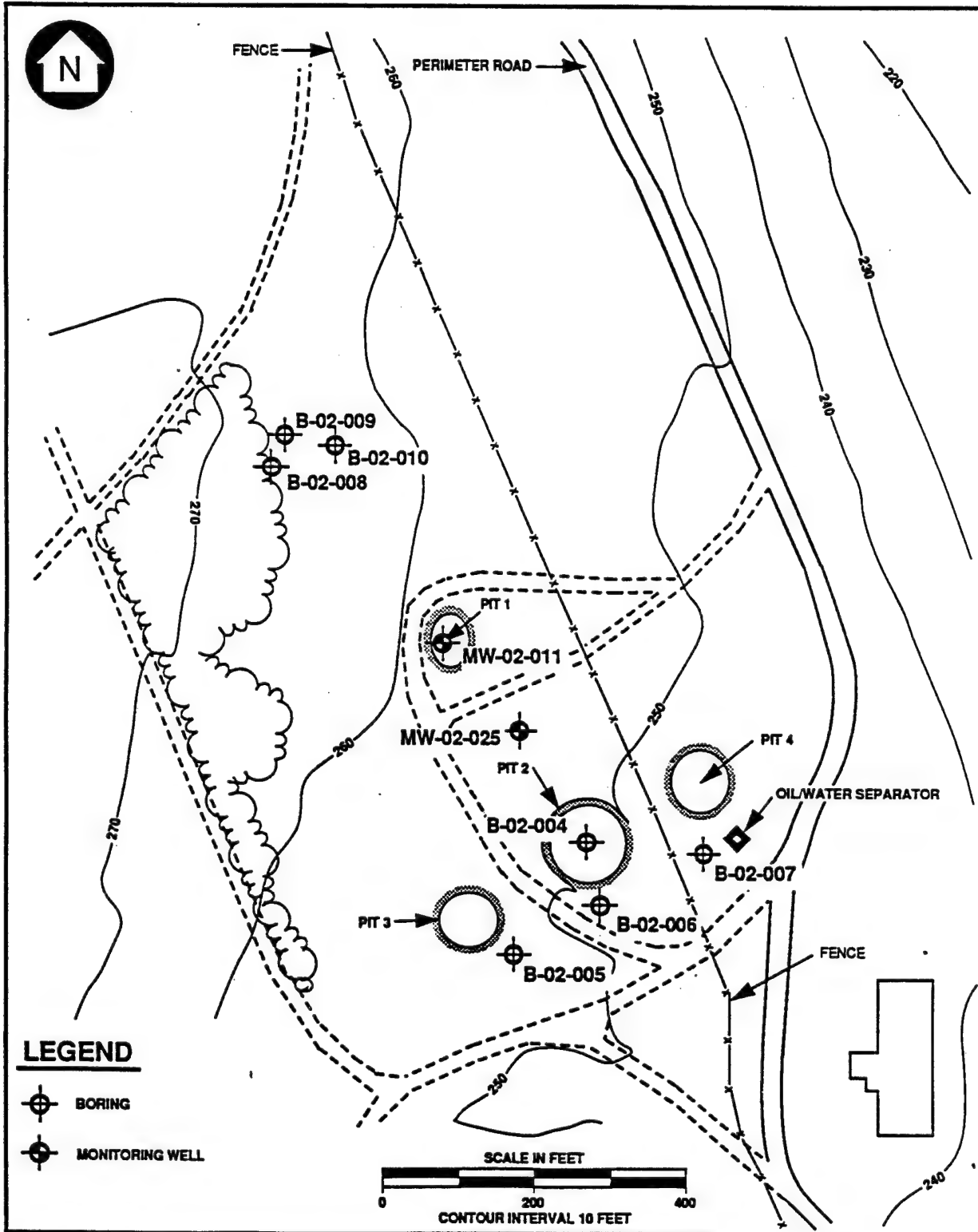


FIGURE 2-11: Phase I RI Subsurface Soil Explorations

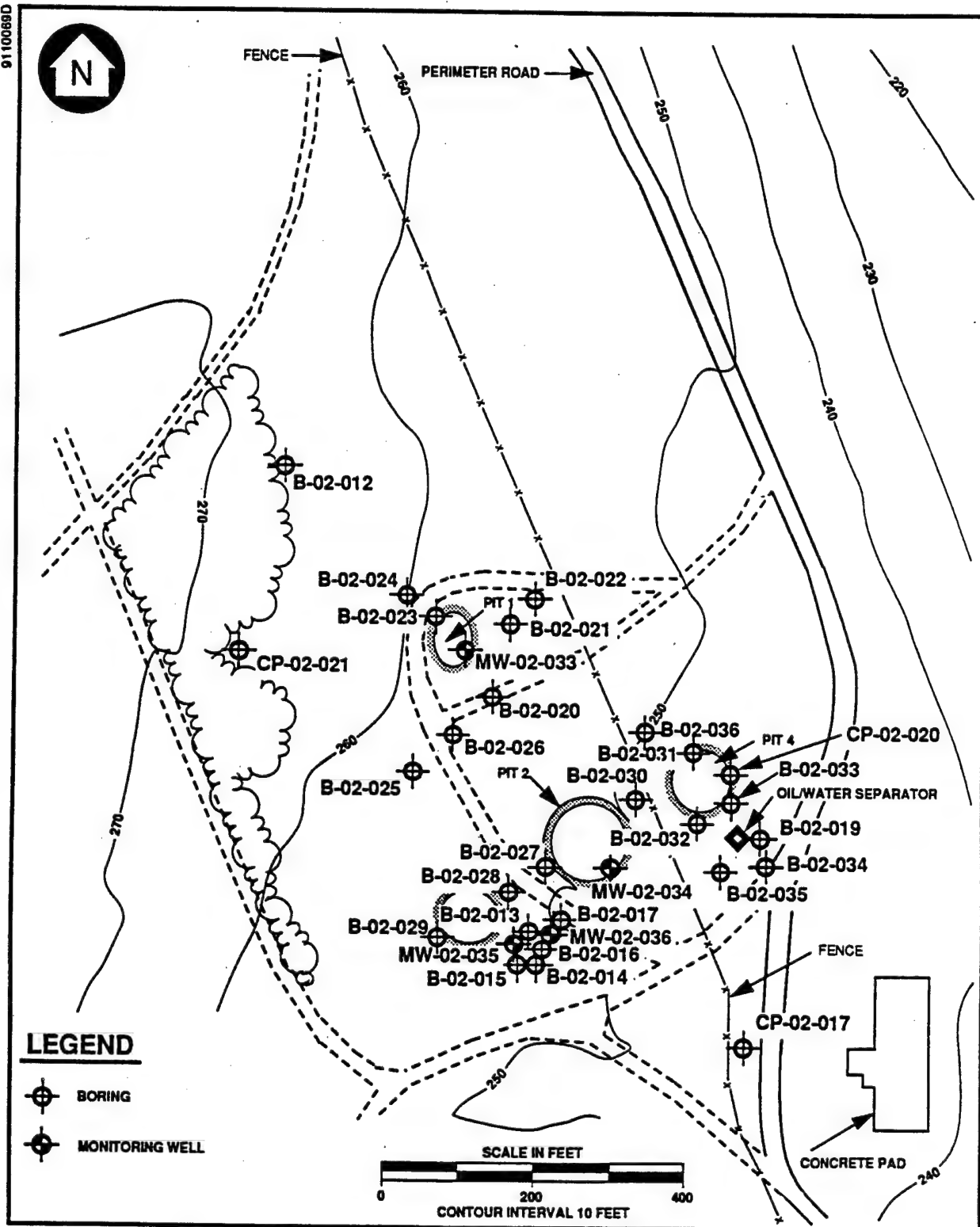


FIGURE 2-12: Phase II RI Subsurface Soil Explorations

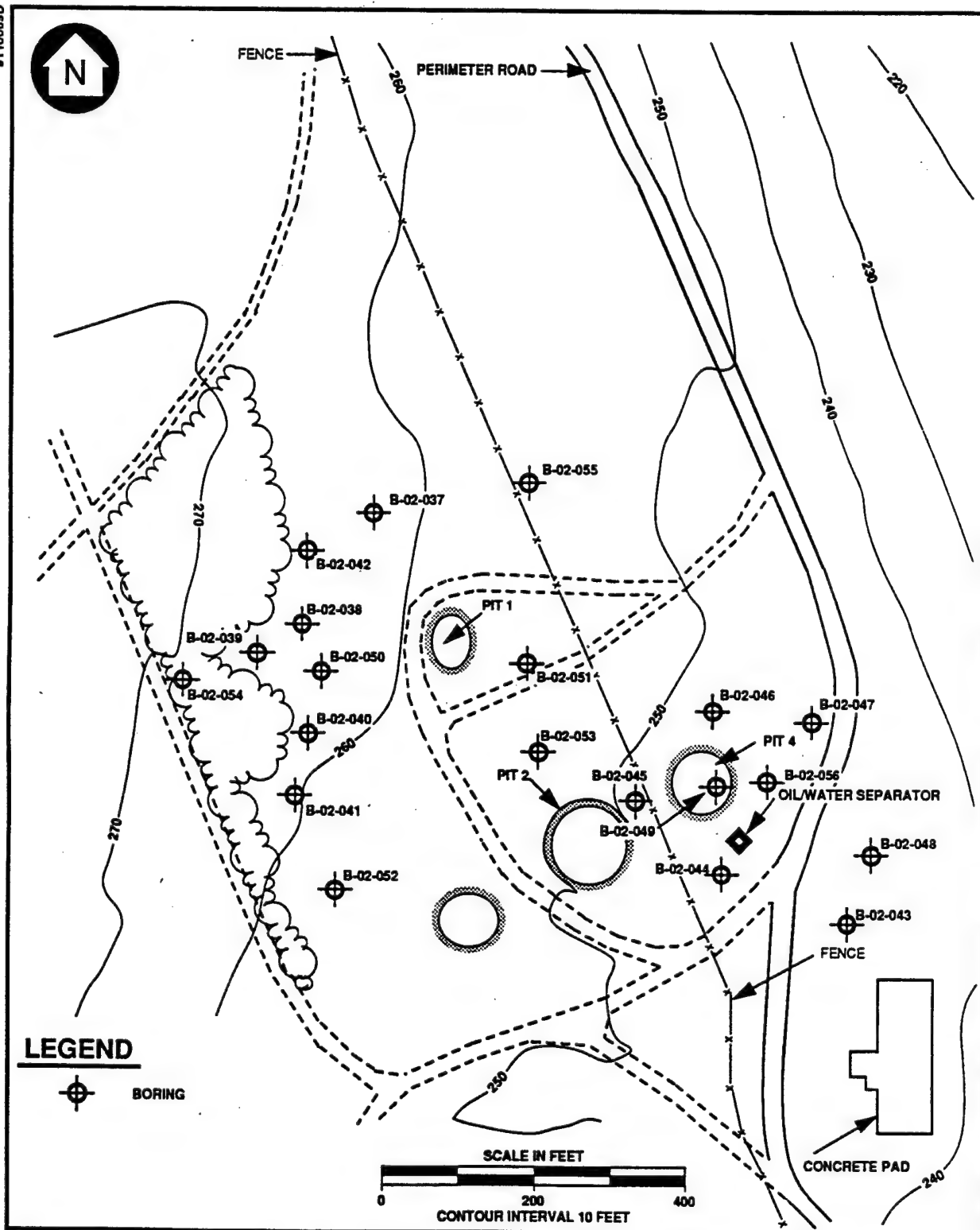
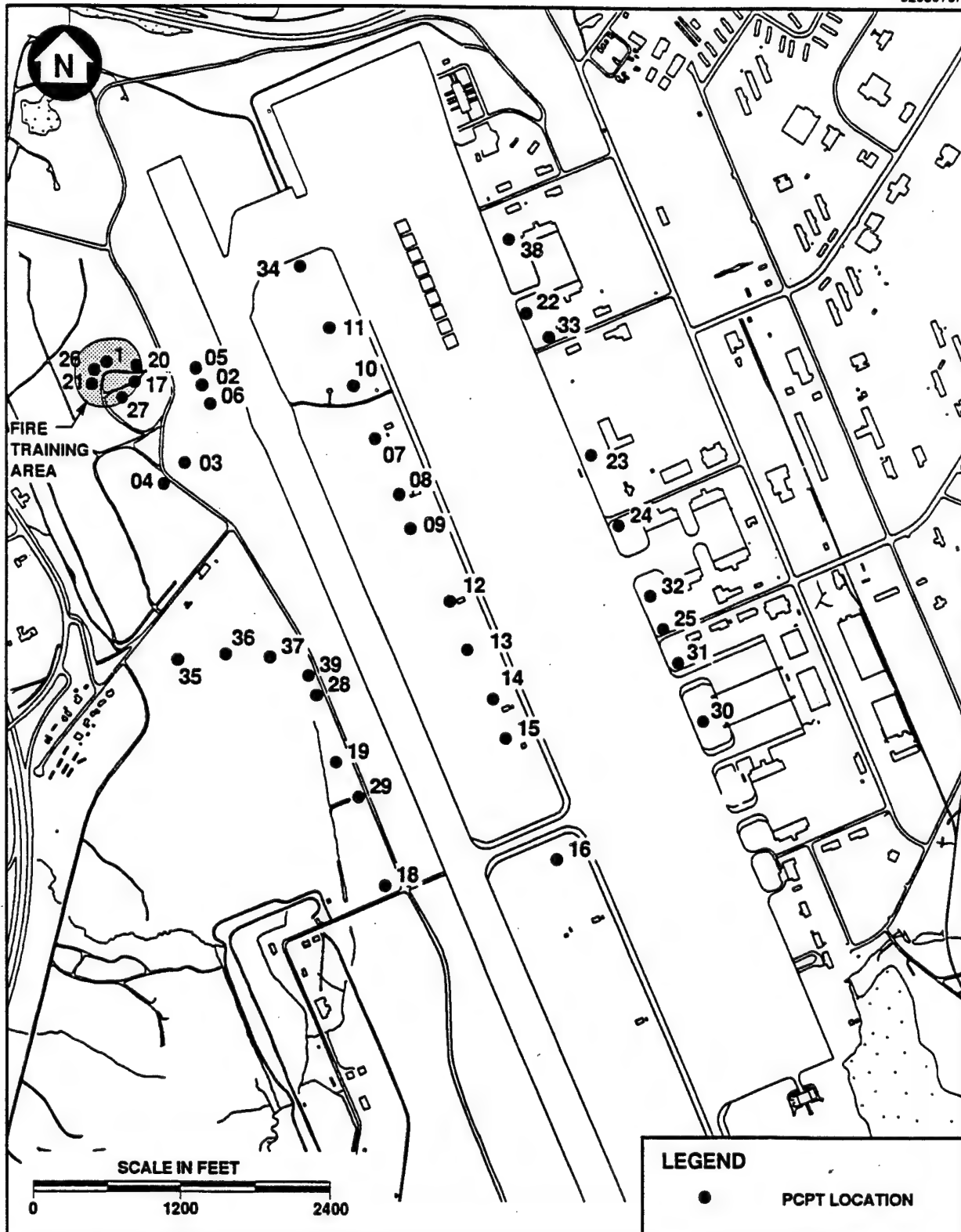
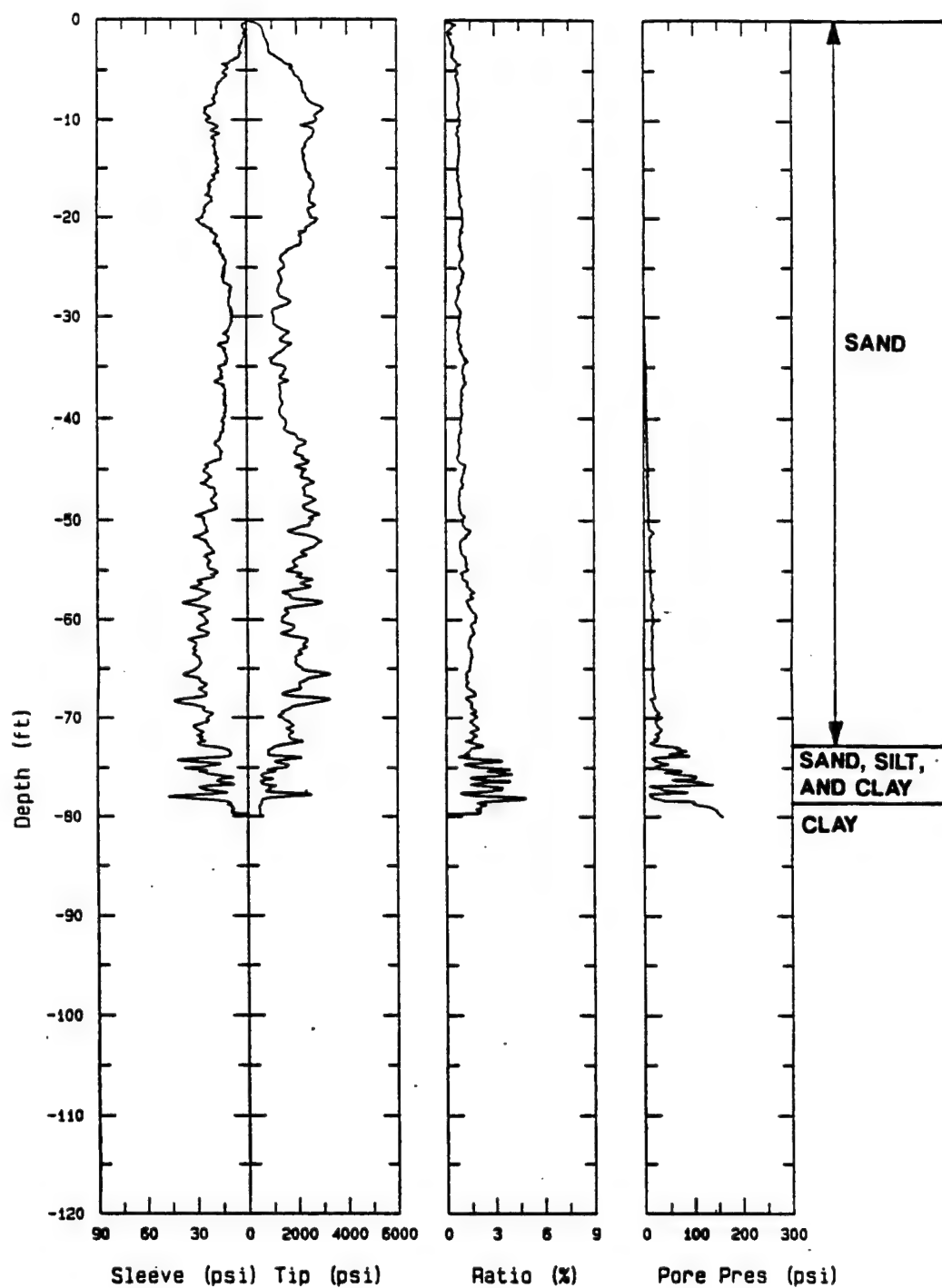


FIGURE 4-13: FT-002 Subsurface Explorations - October 1991

**PCPT BORING LOCATIONS**



TYPICAL PCPT PLOT

The following PCPT borings did not have stratigraphic logs made as they were located close to an existing logged well or another logged PCPT boring.

CP-02-006

CP-02-011

CP-02-016

CP-02-026

CP-02-027

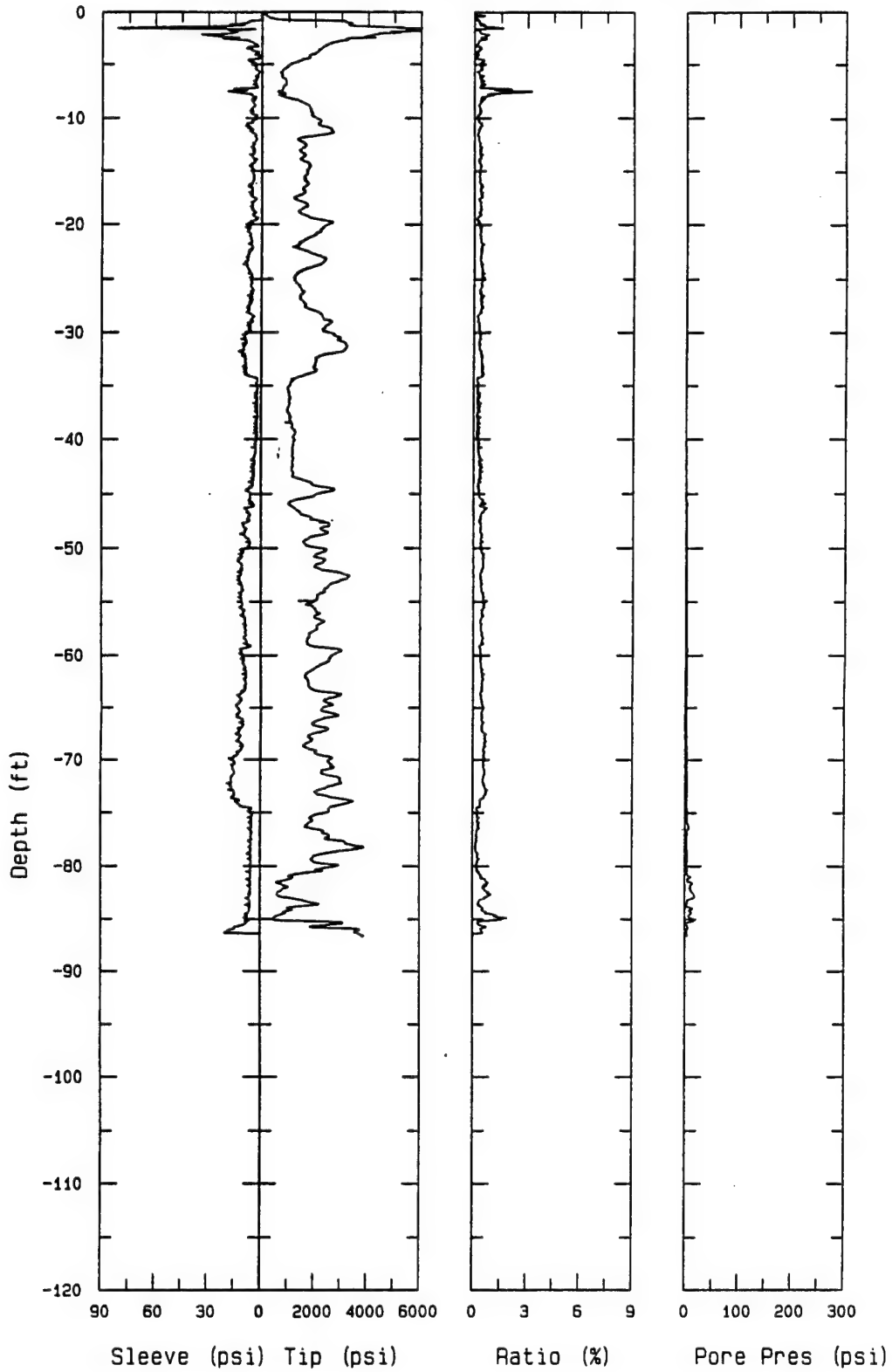
CP-02-029

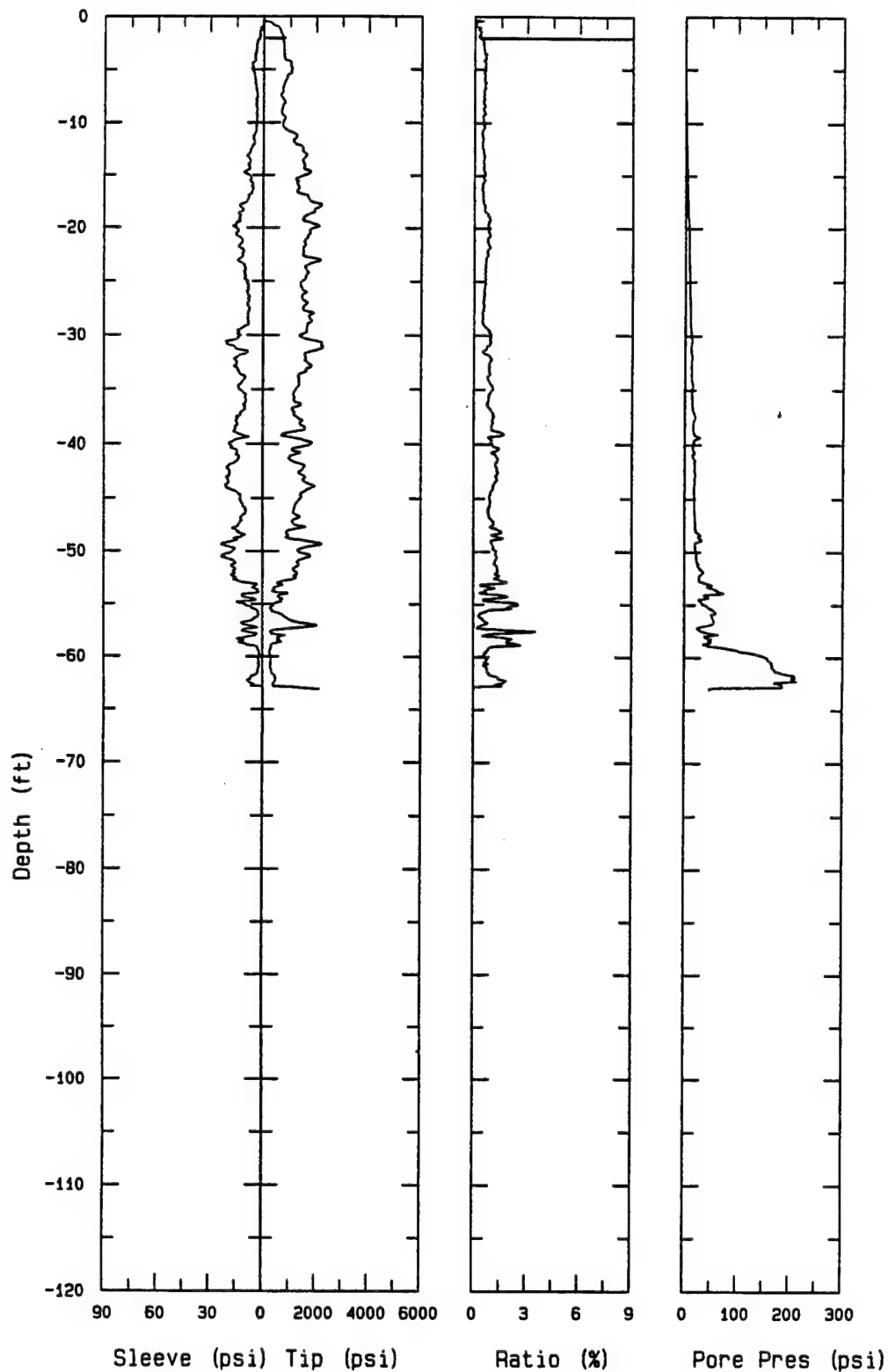
CP-02-032

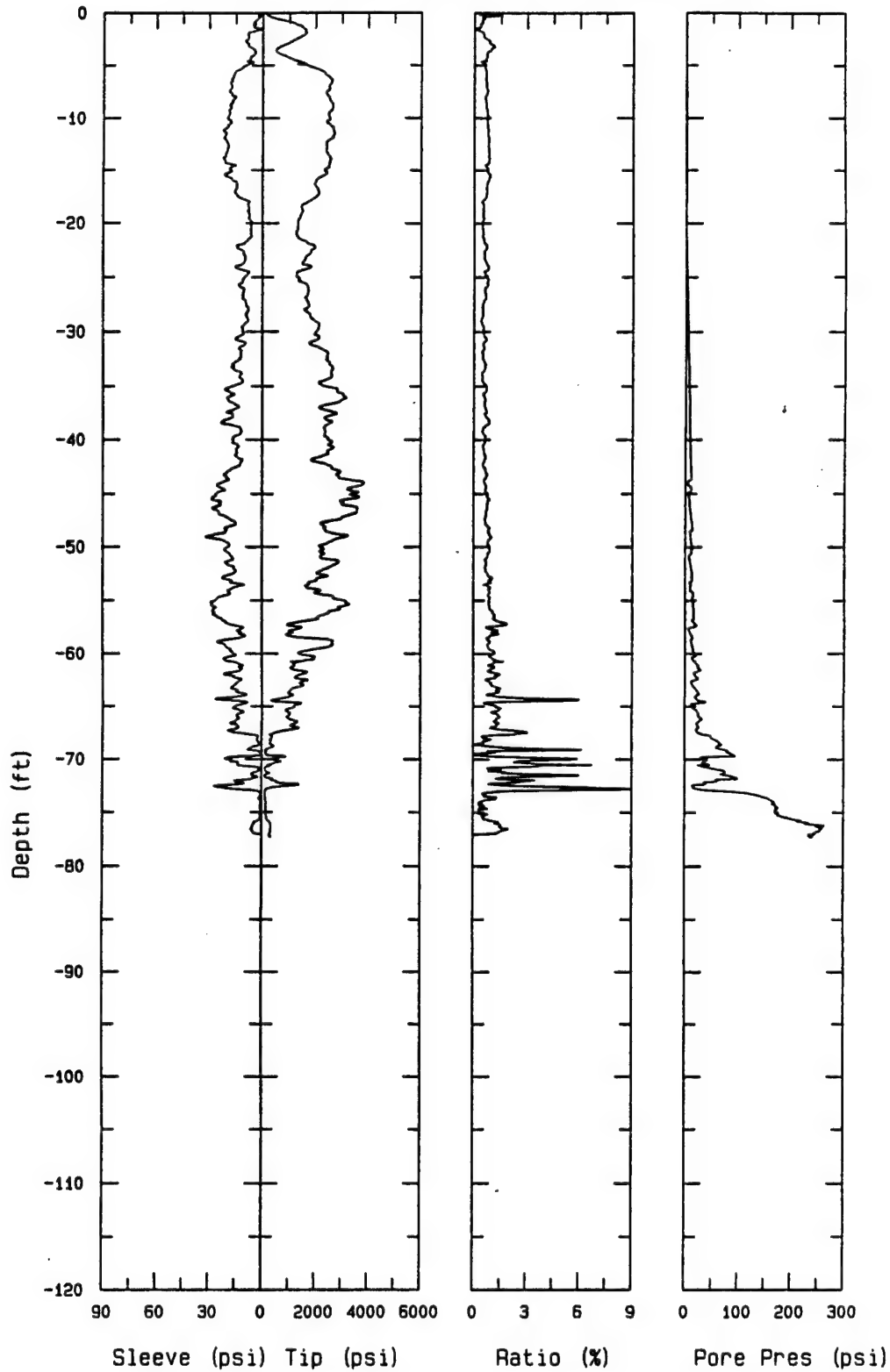
CP-02-033

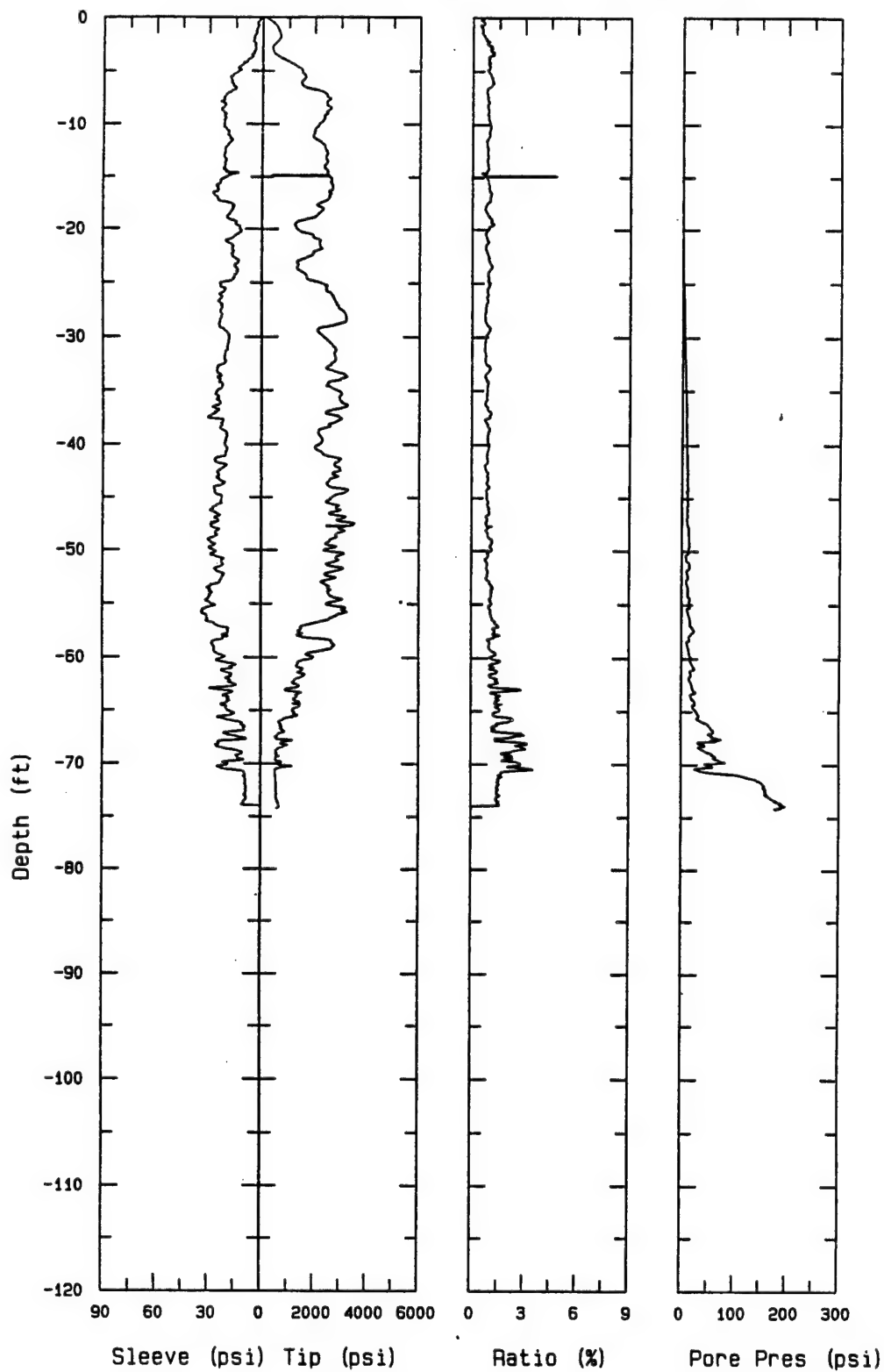
CP-02-038

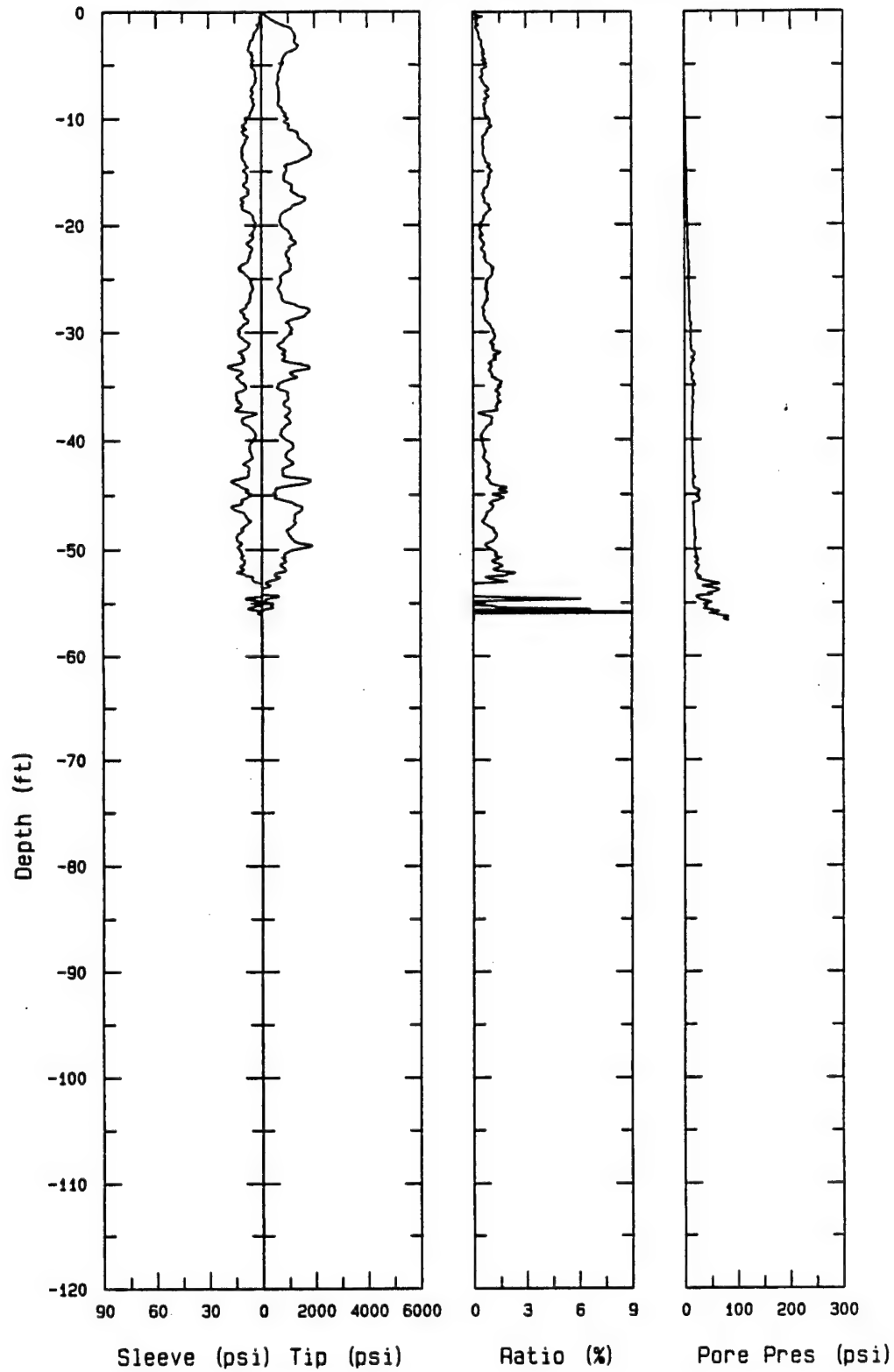
CP-02-039

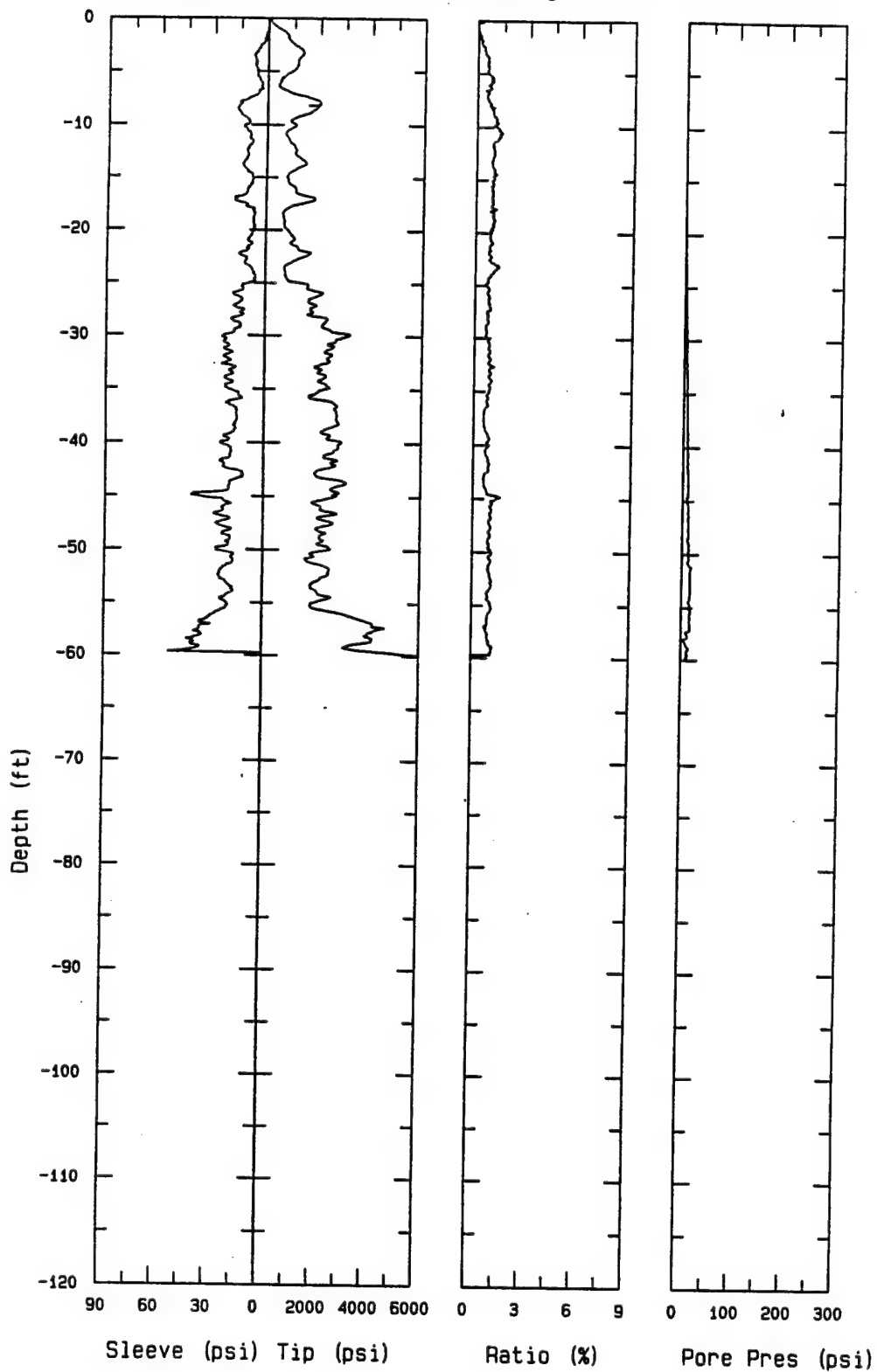


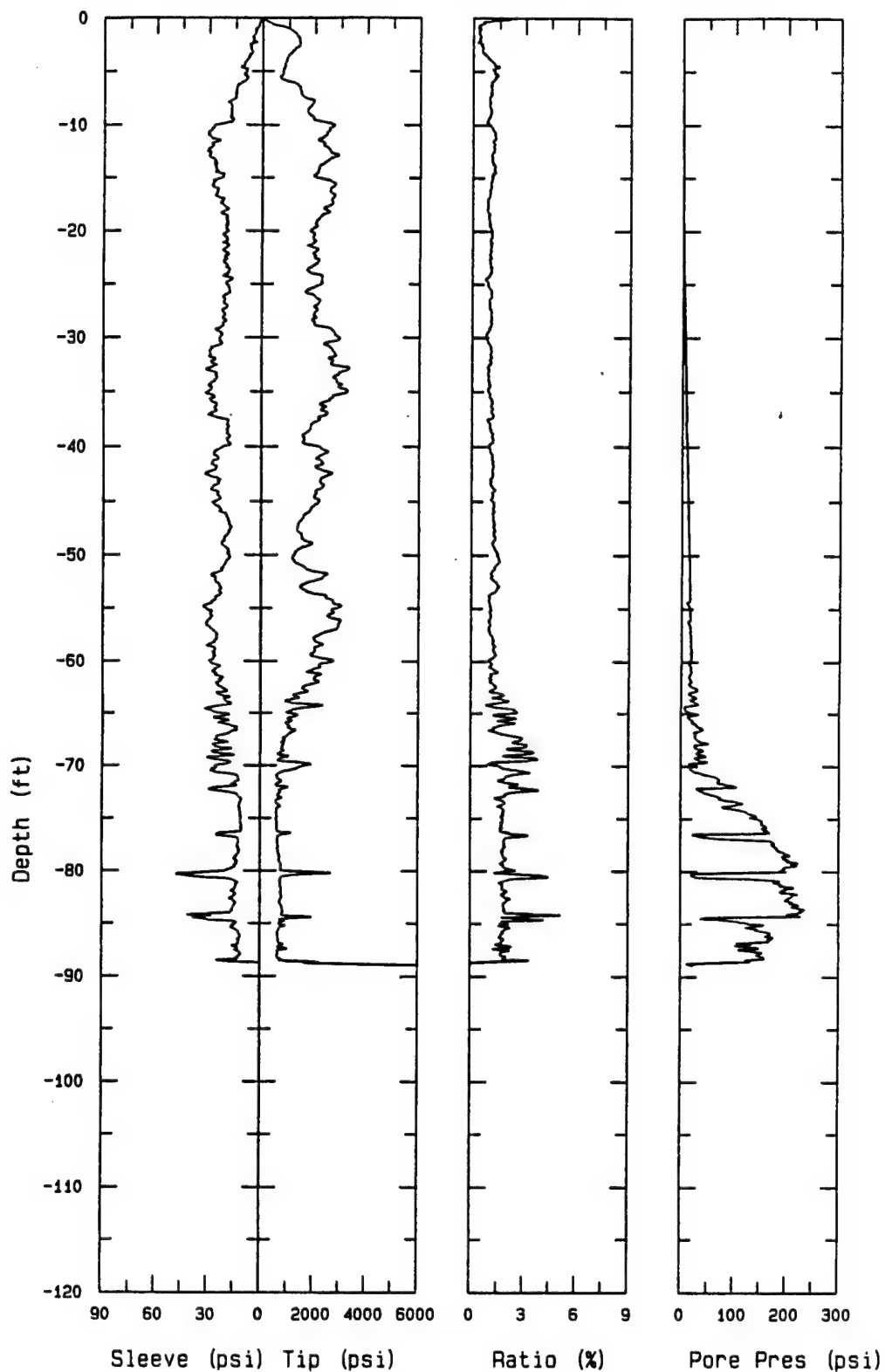


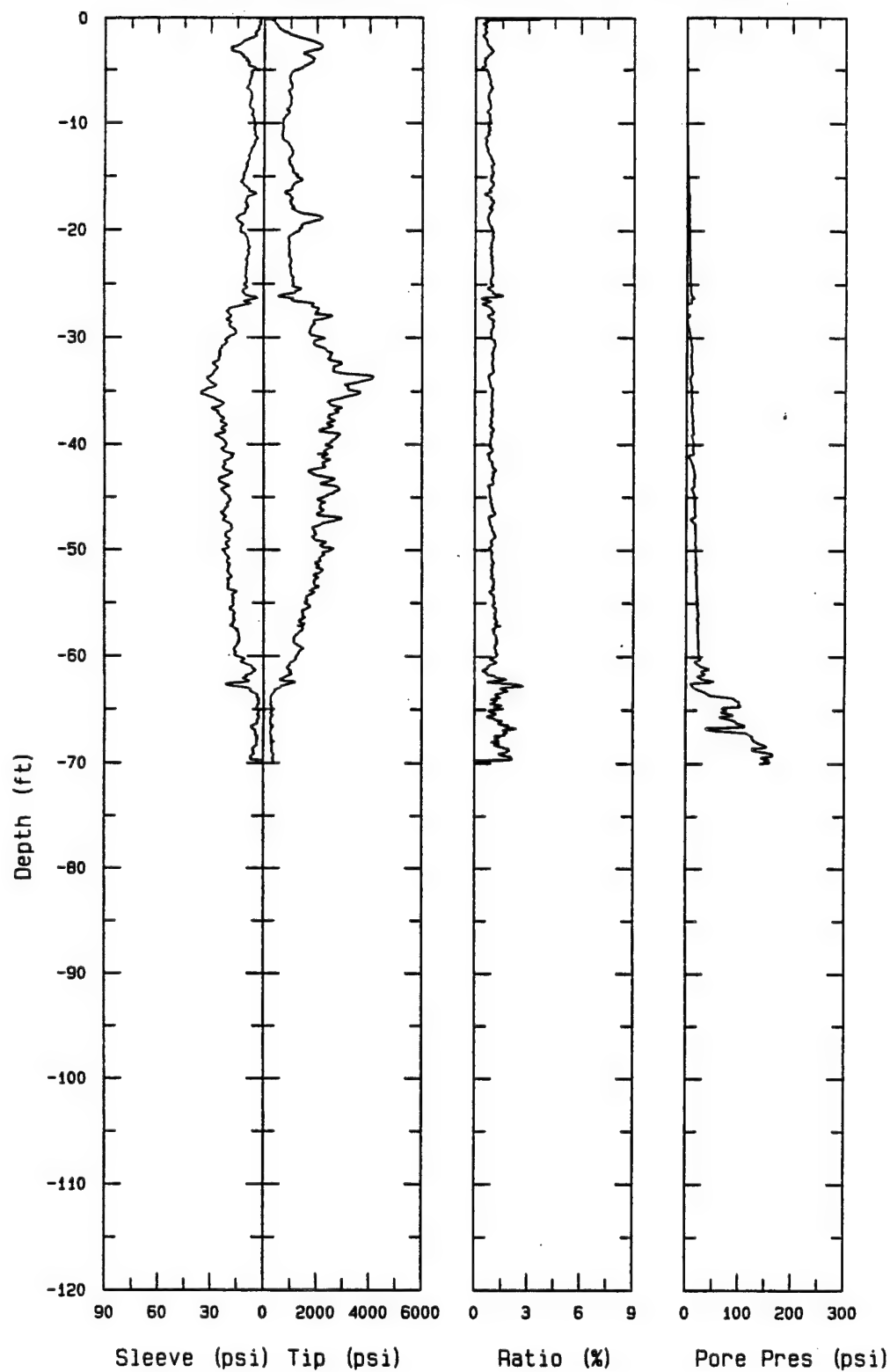


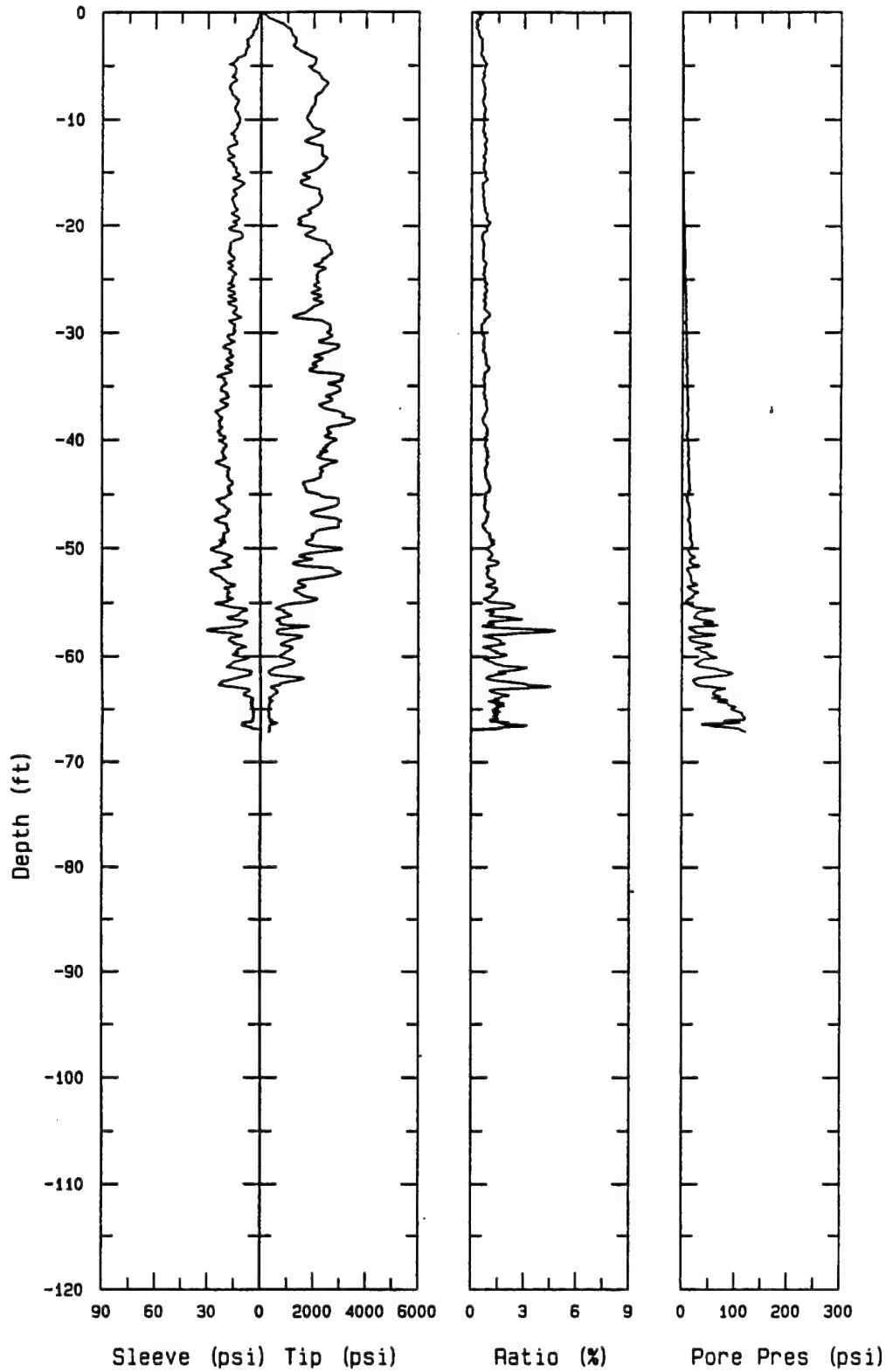


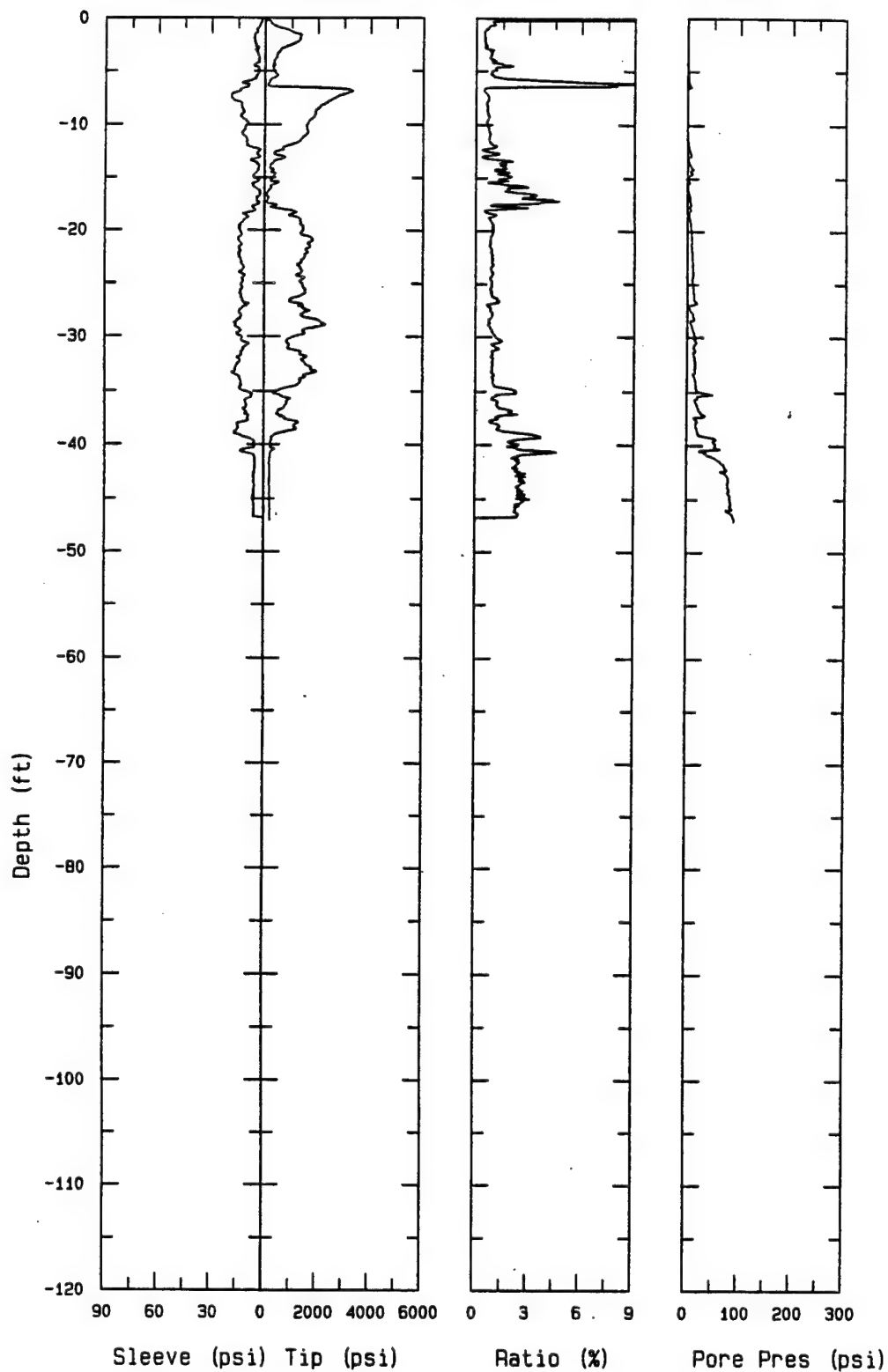


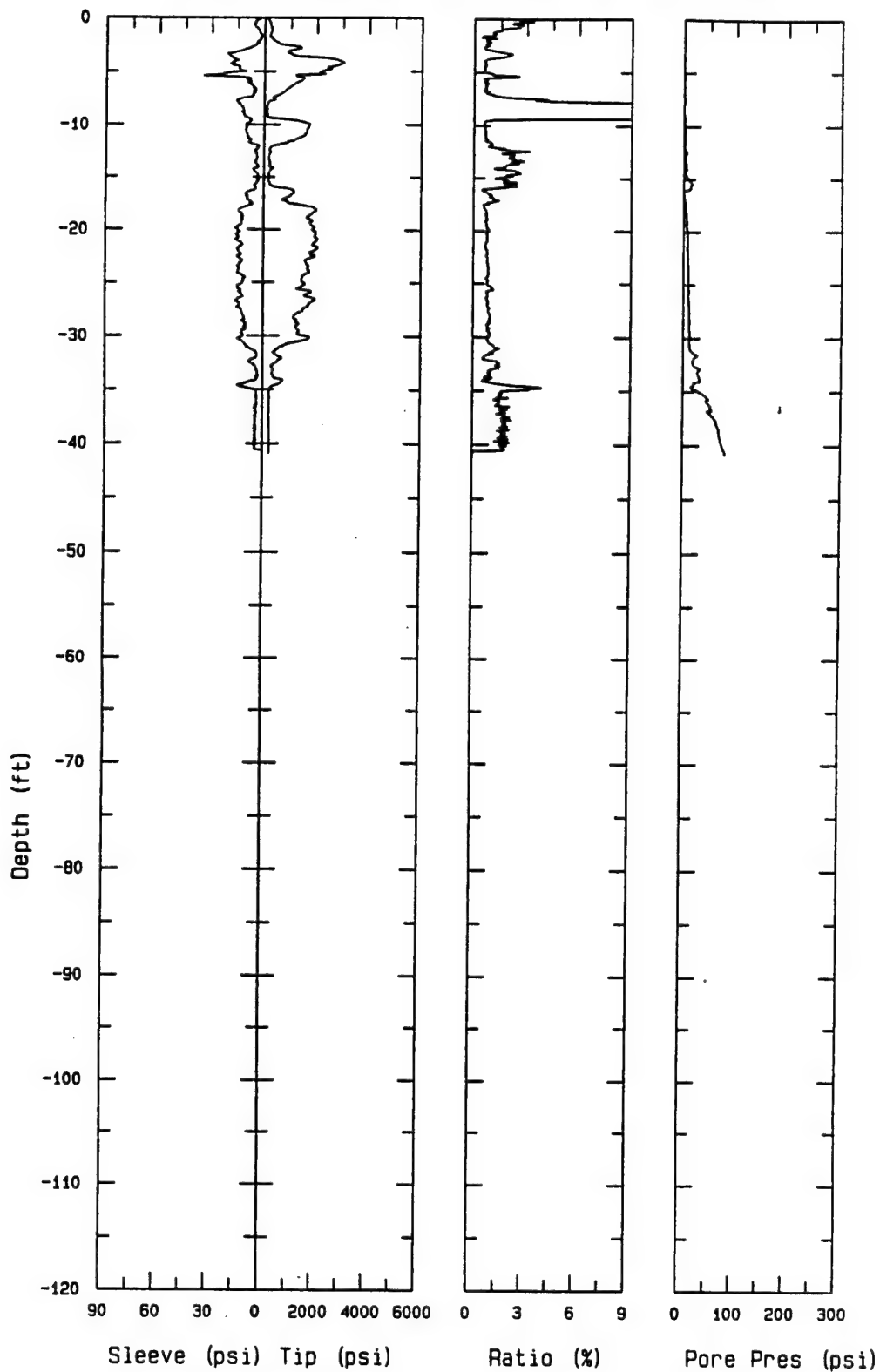


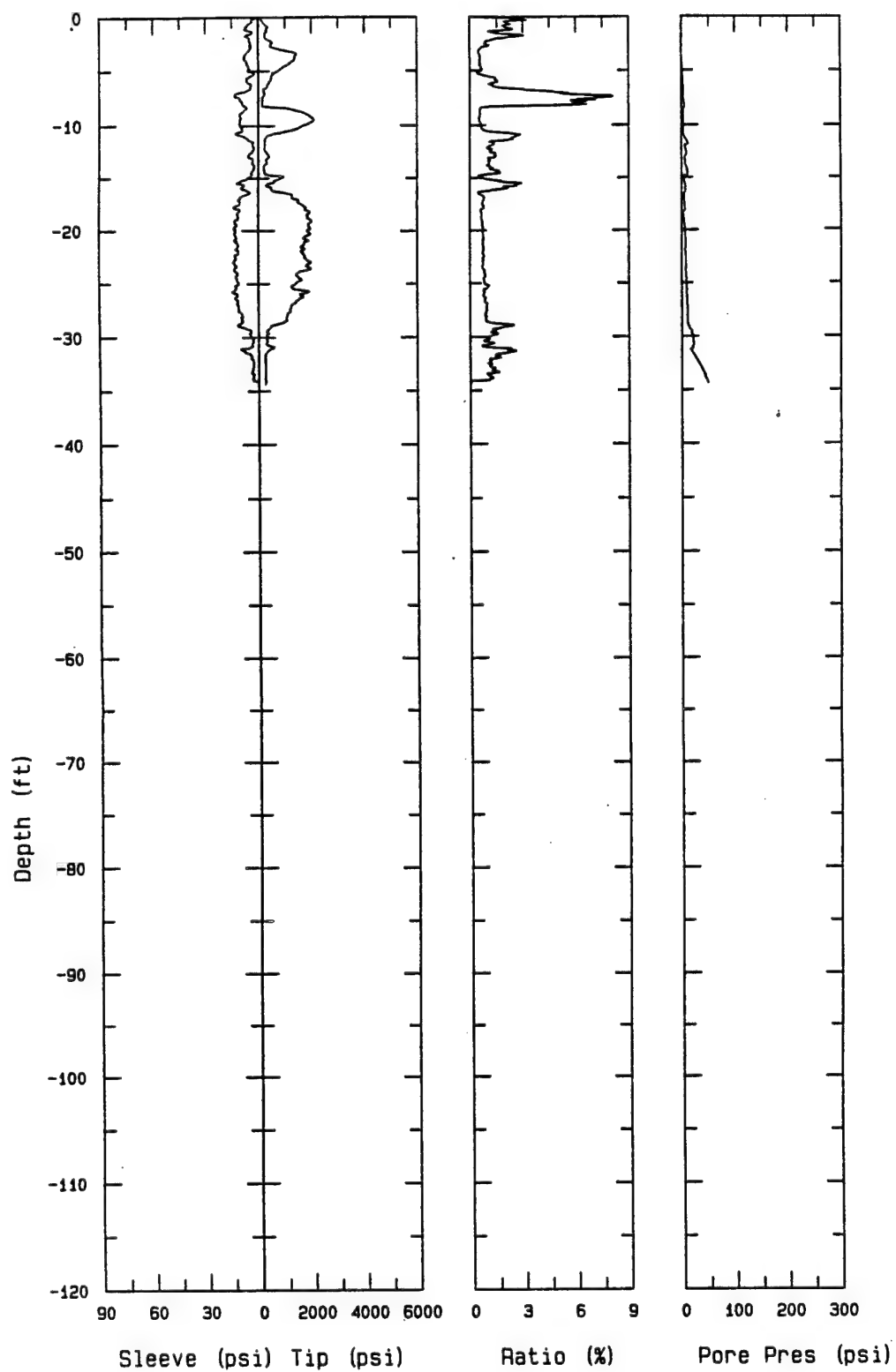


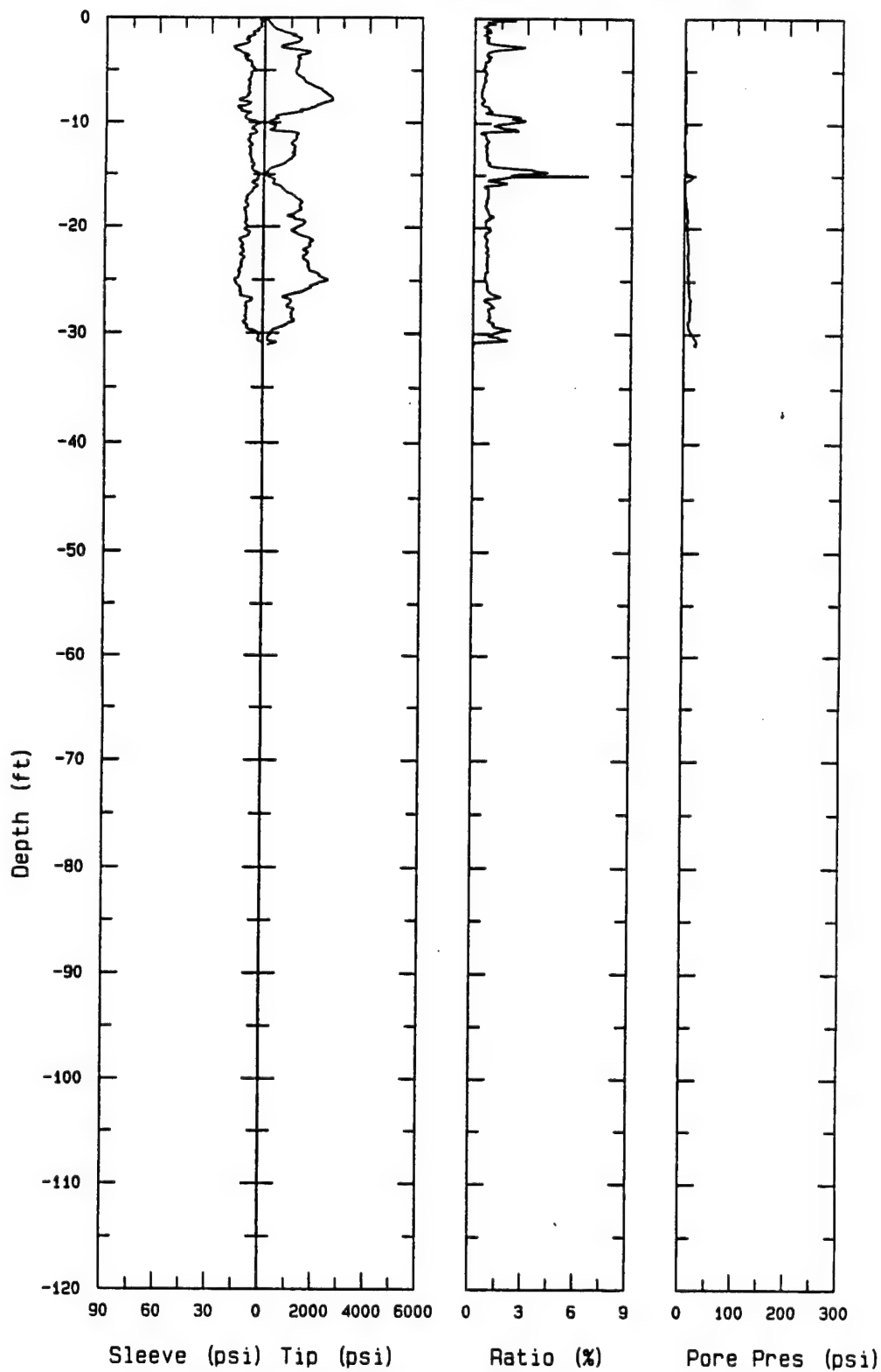


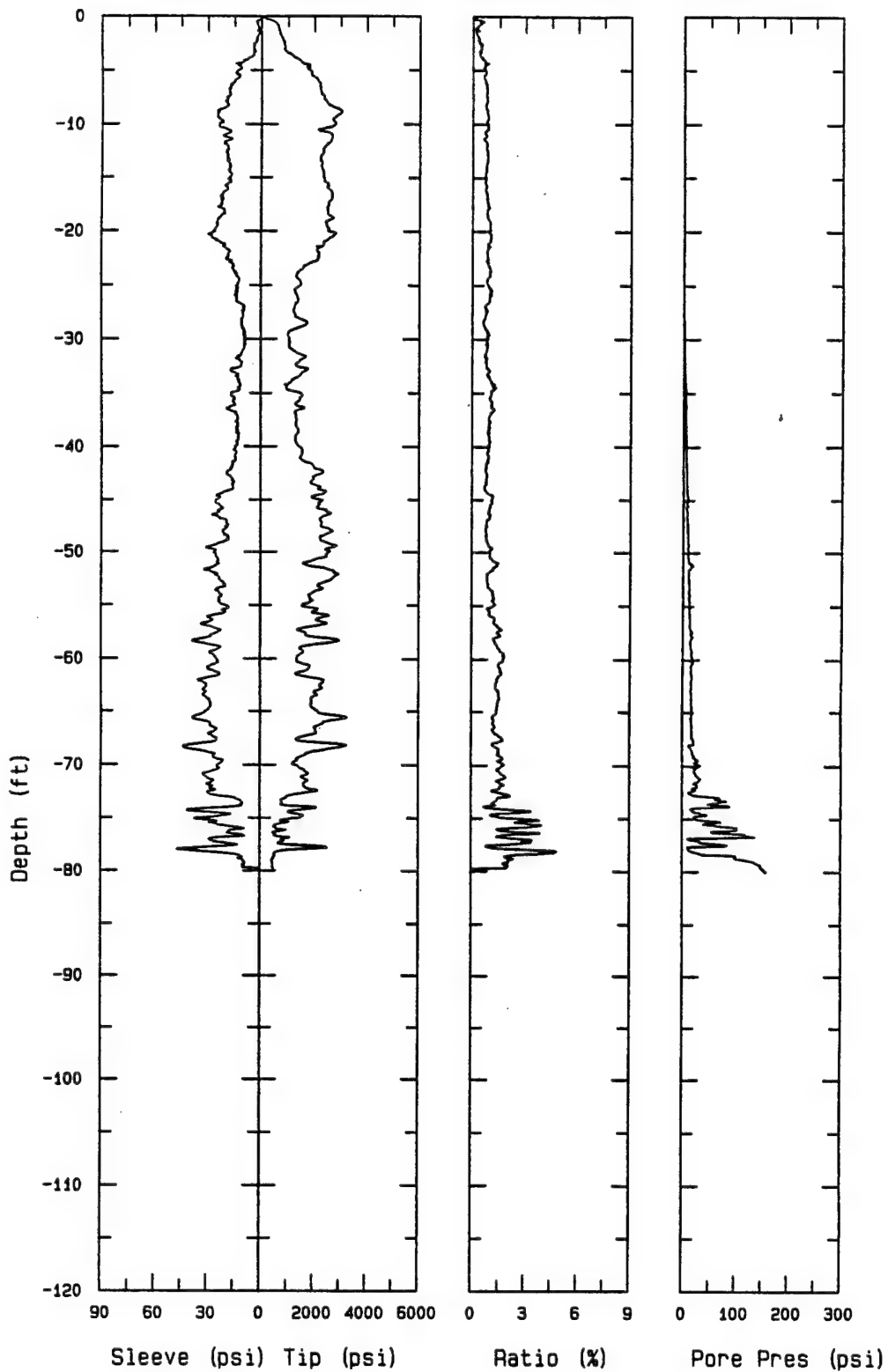


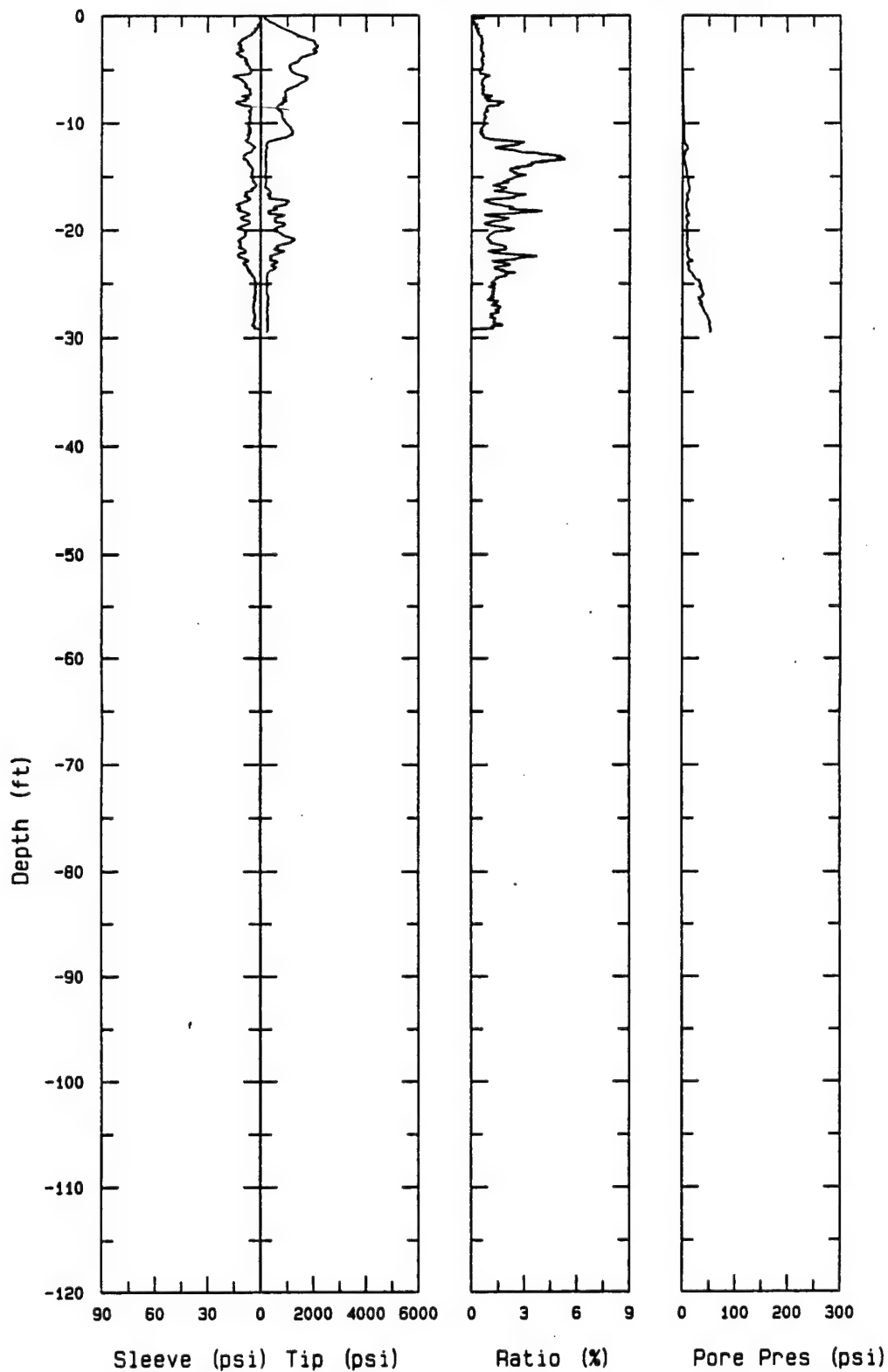


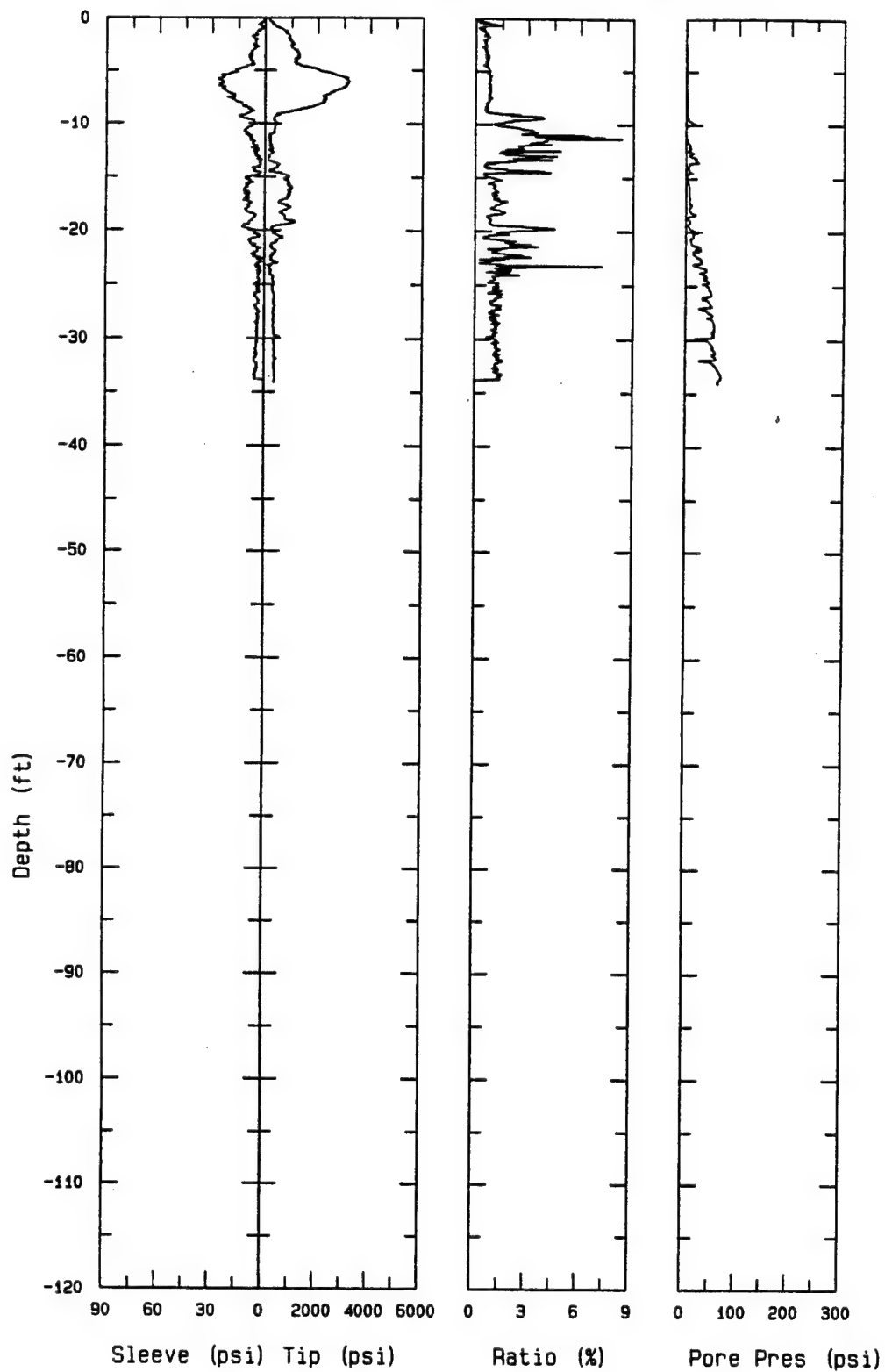


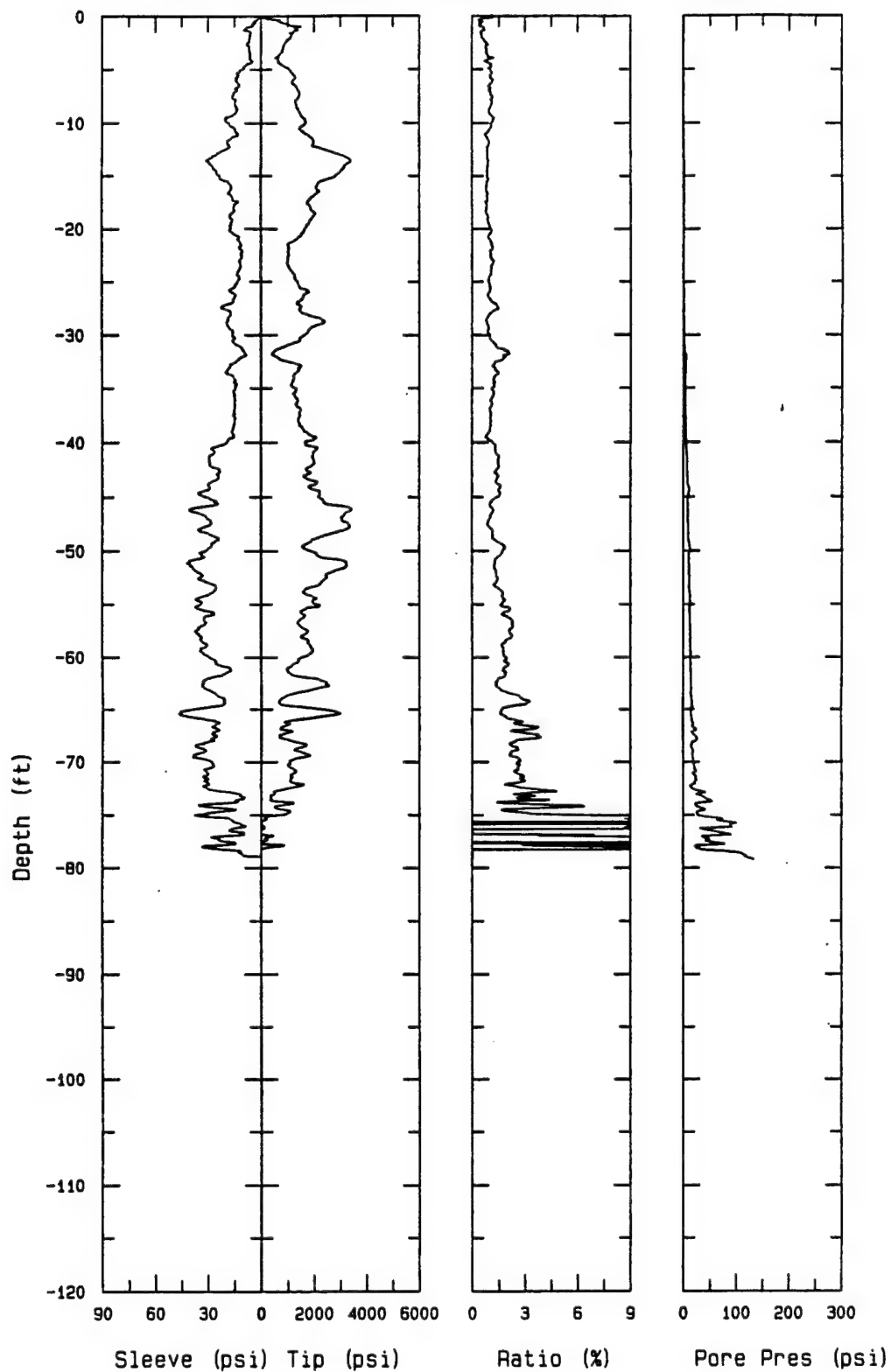


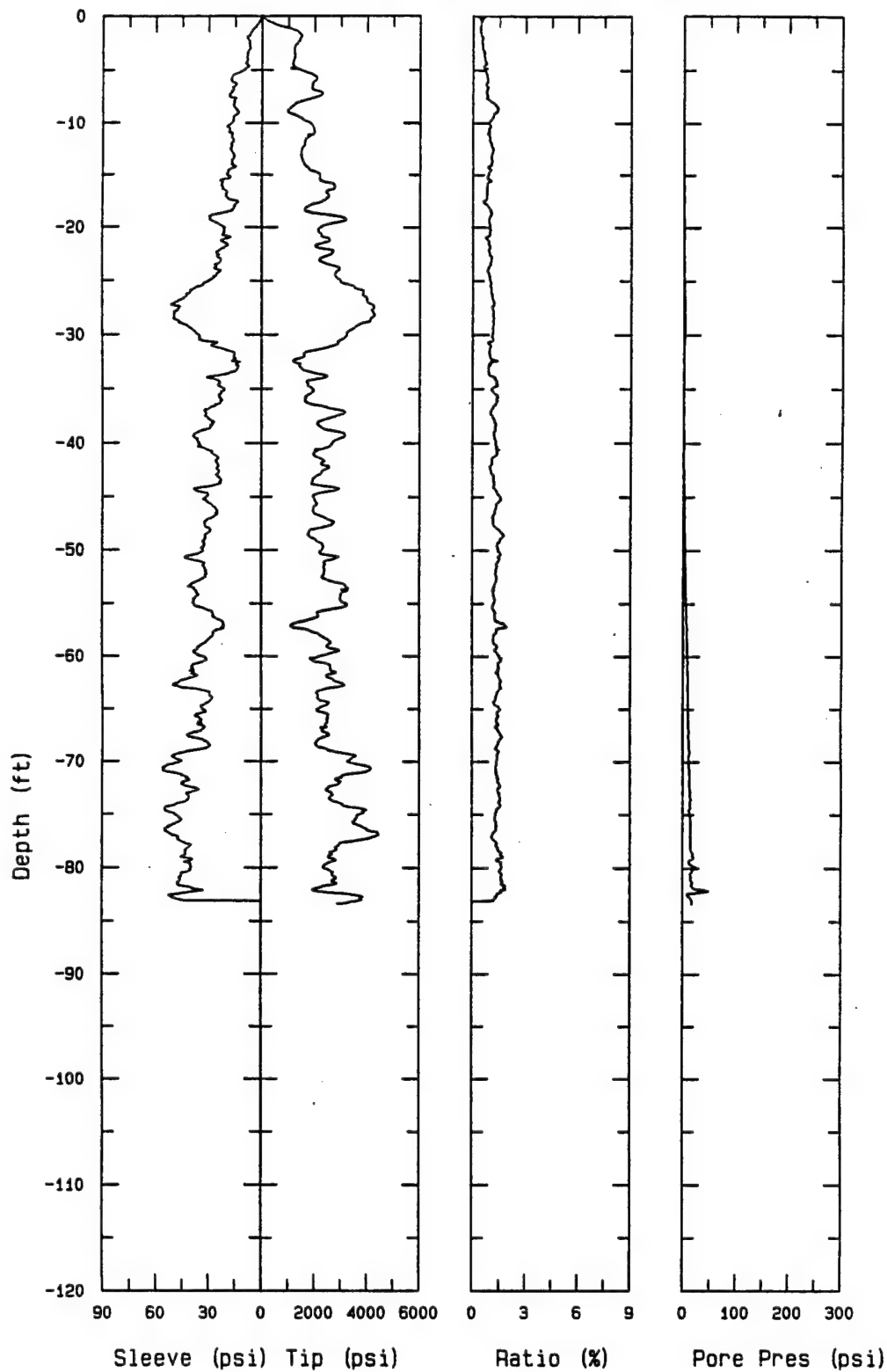


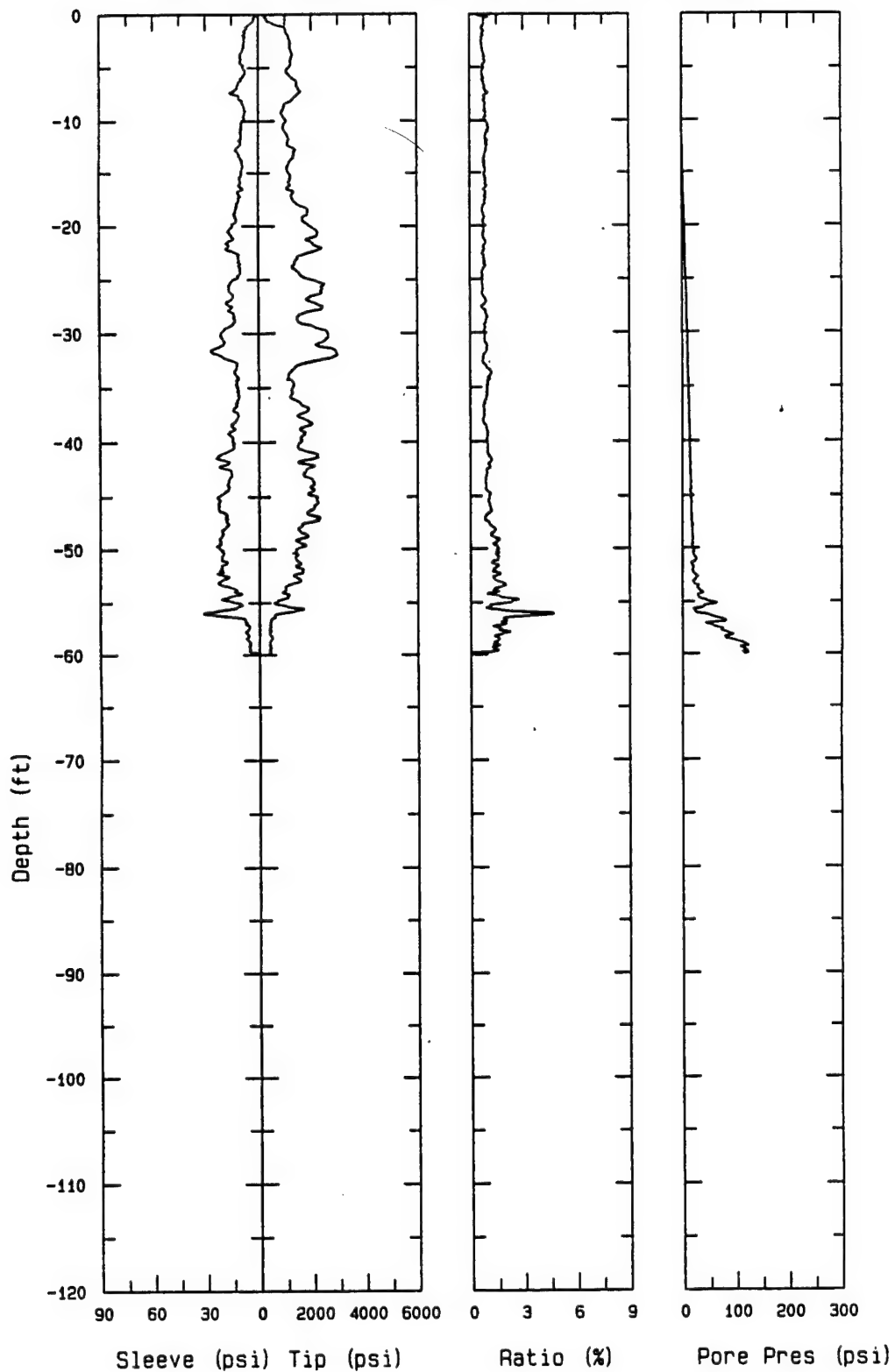


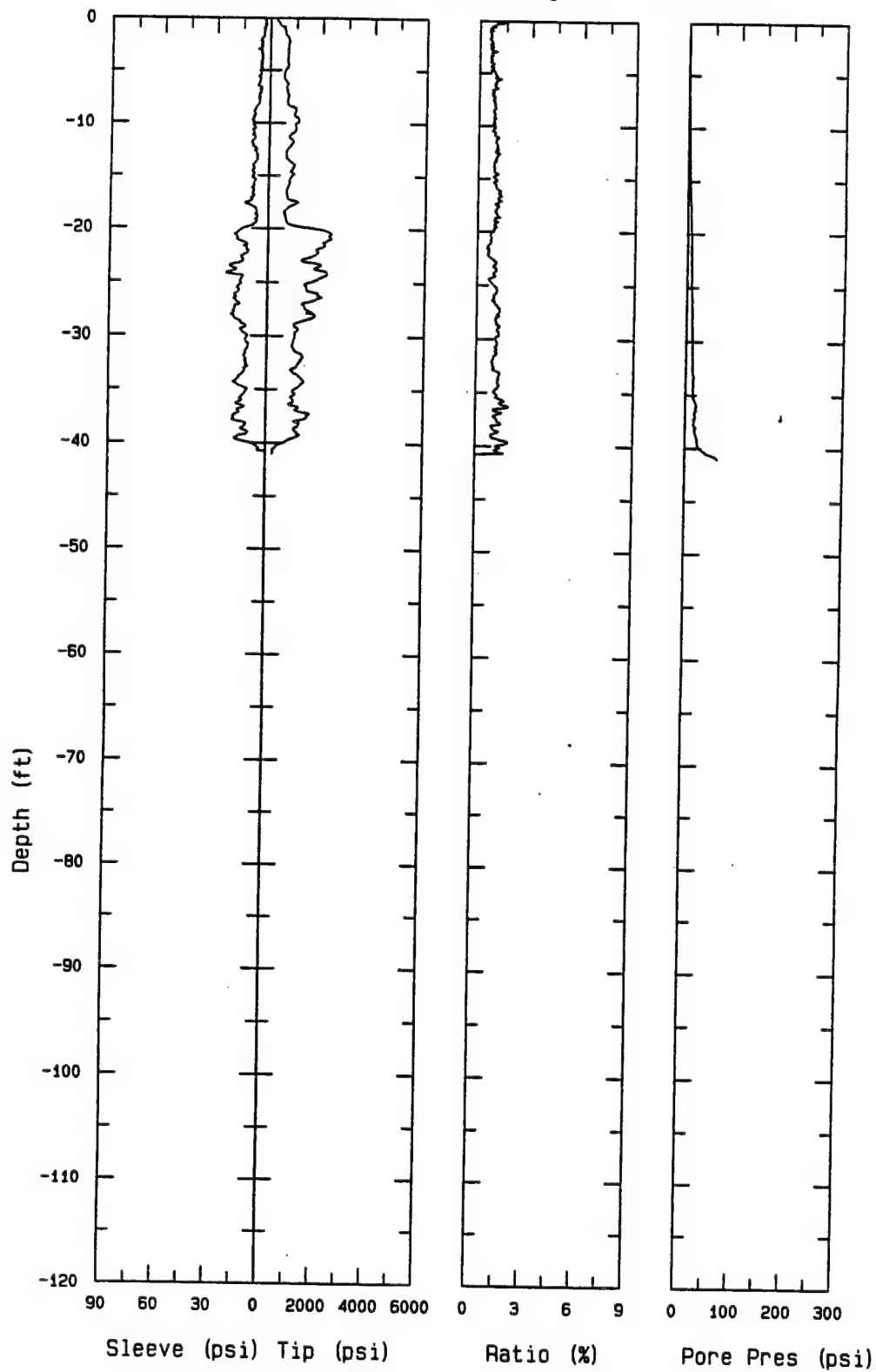


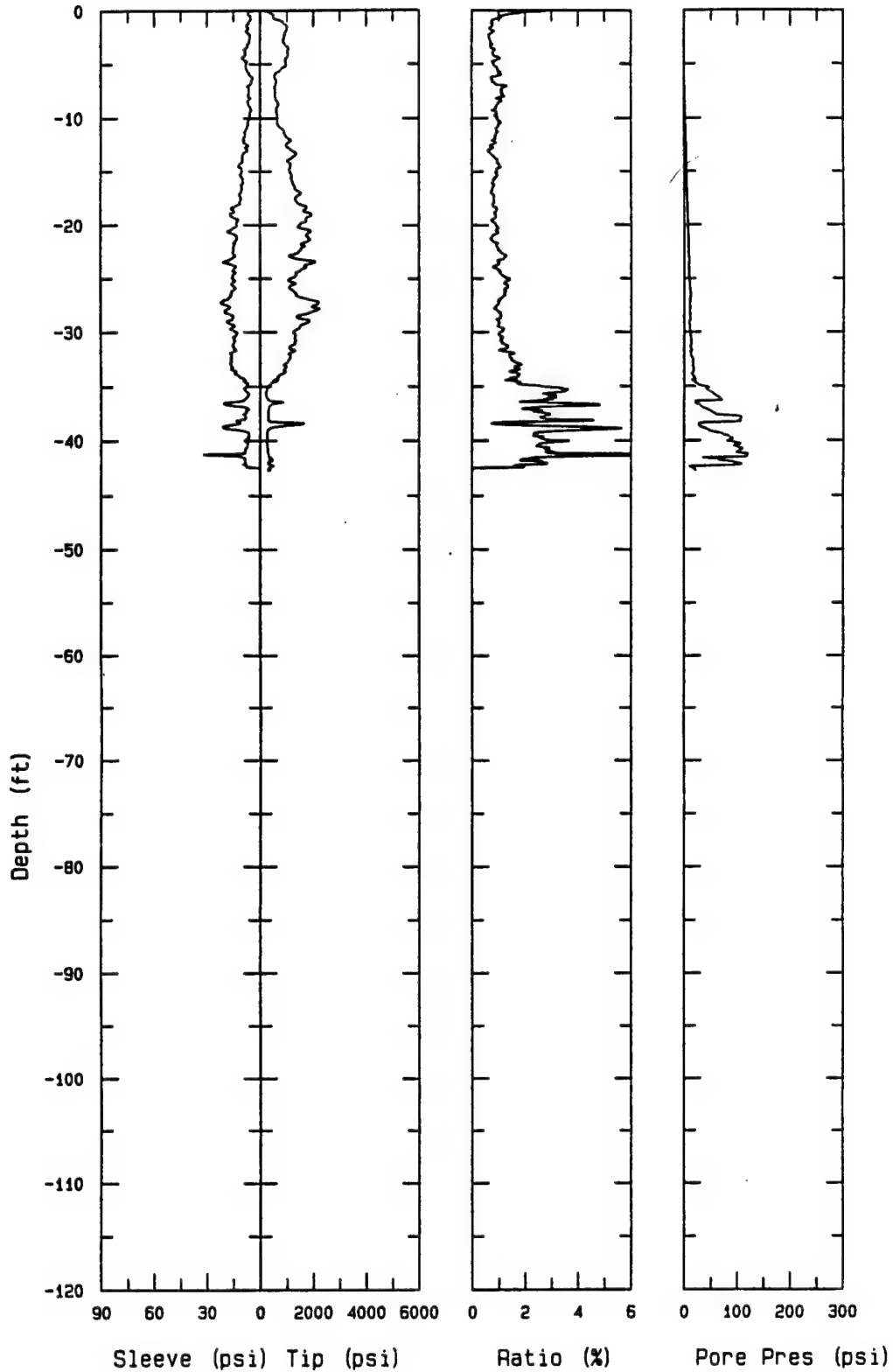




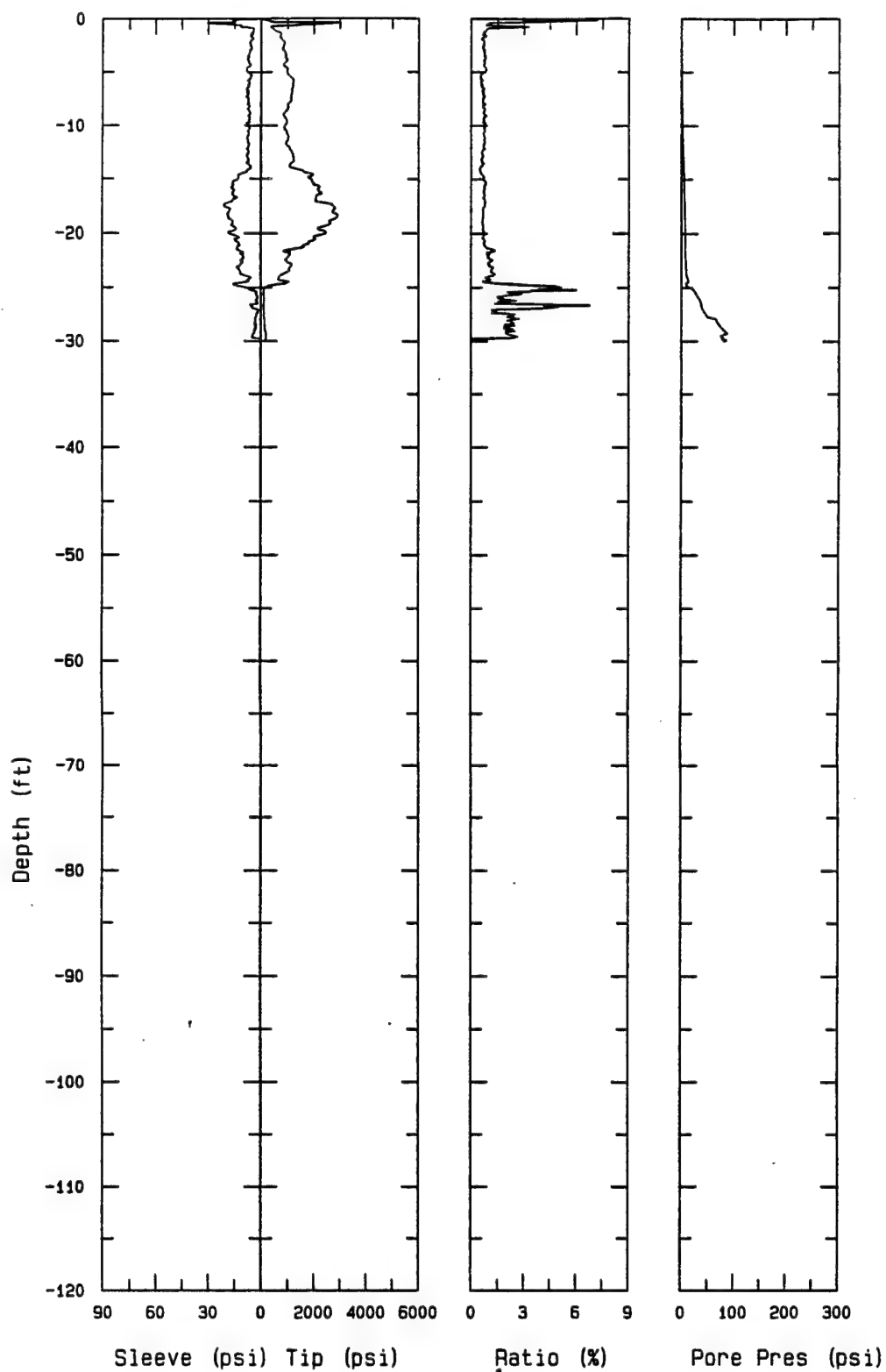


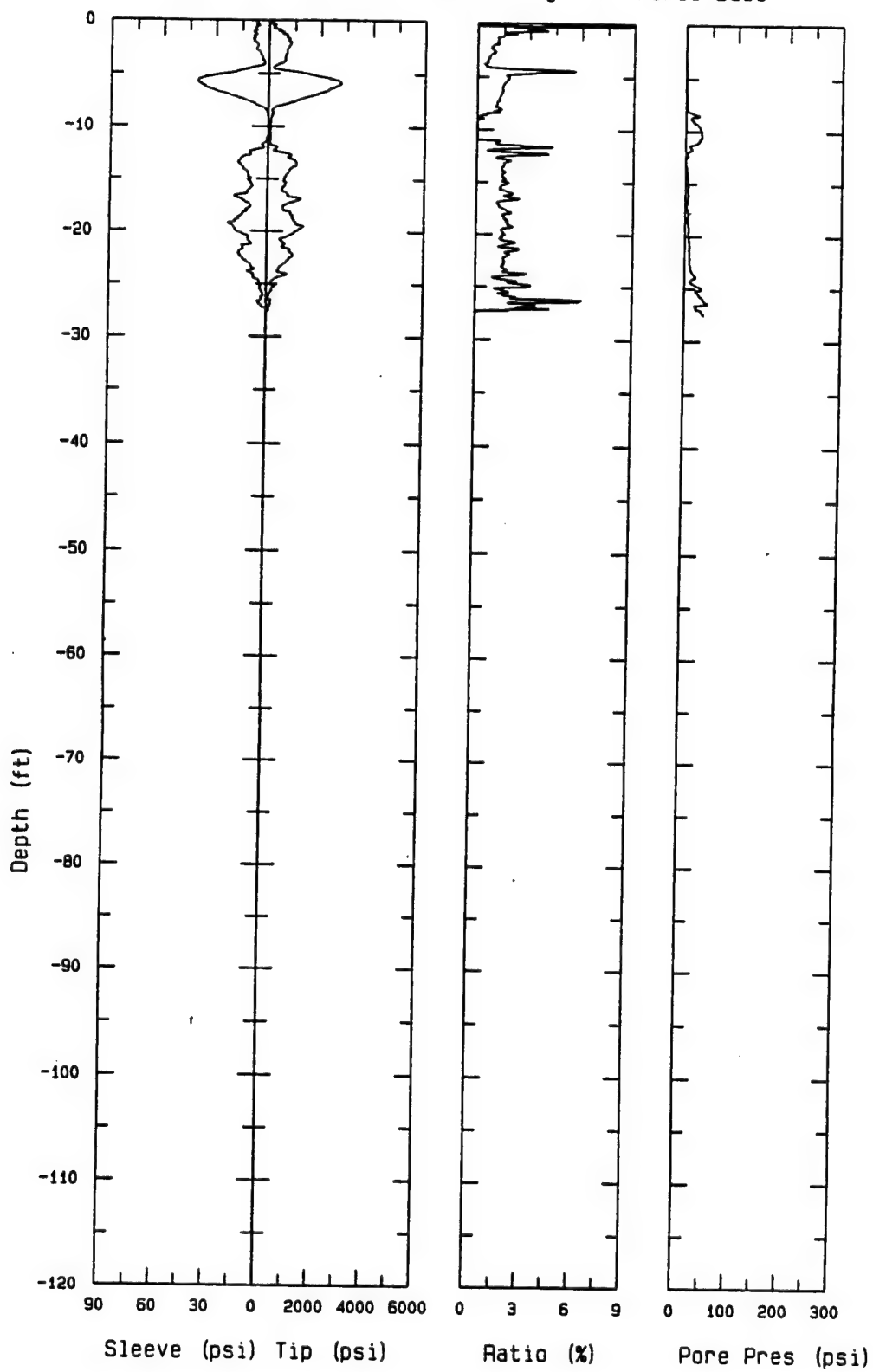




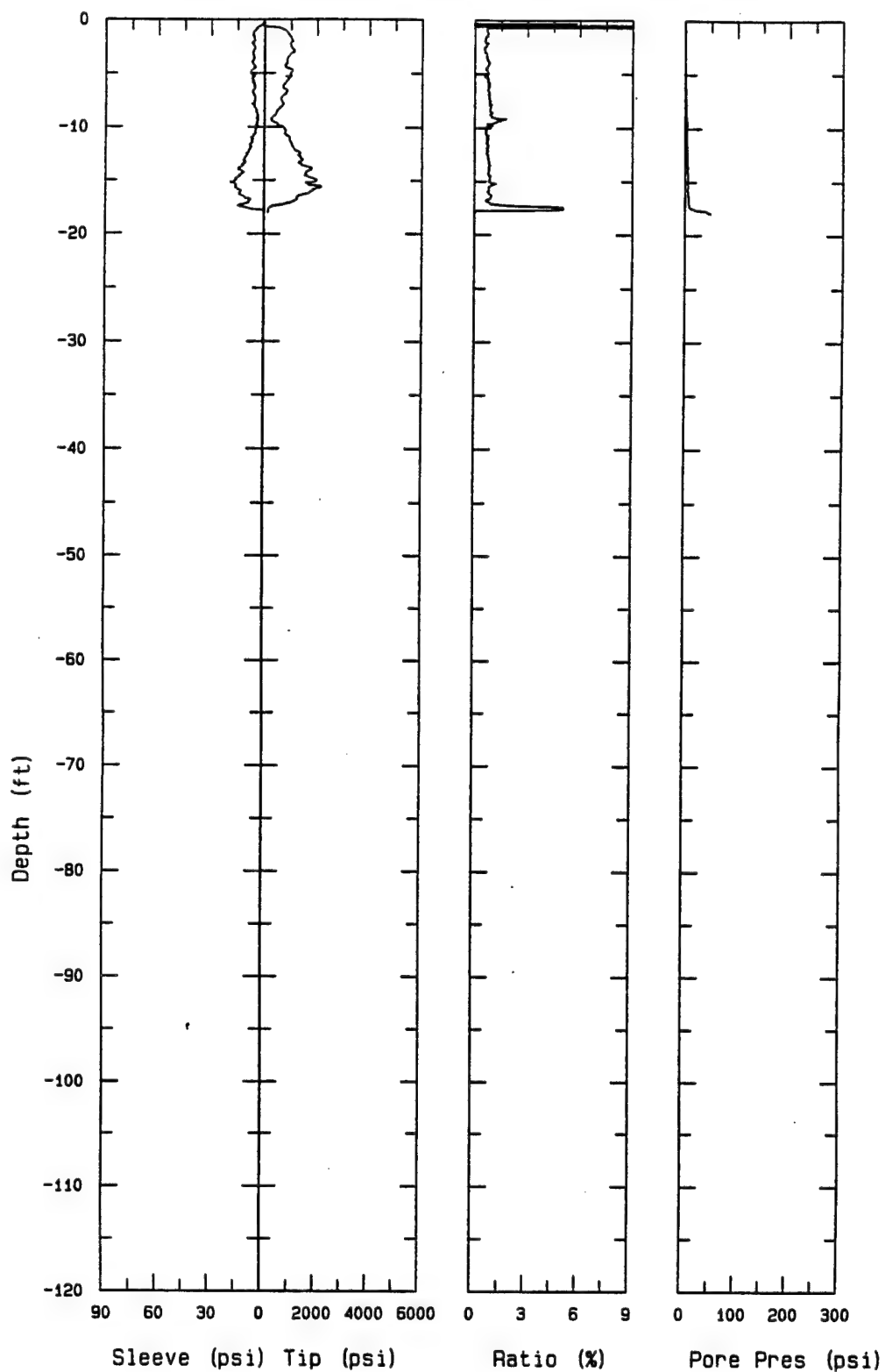


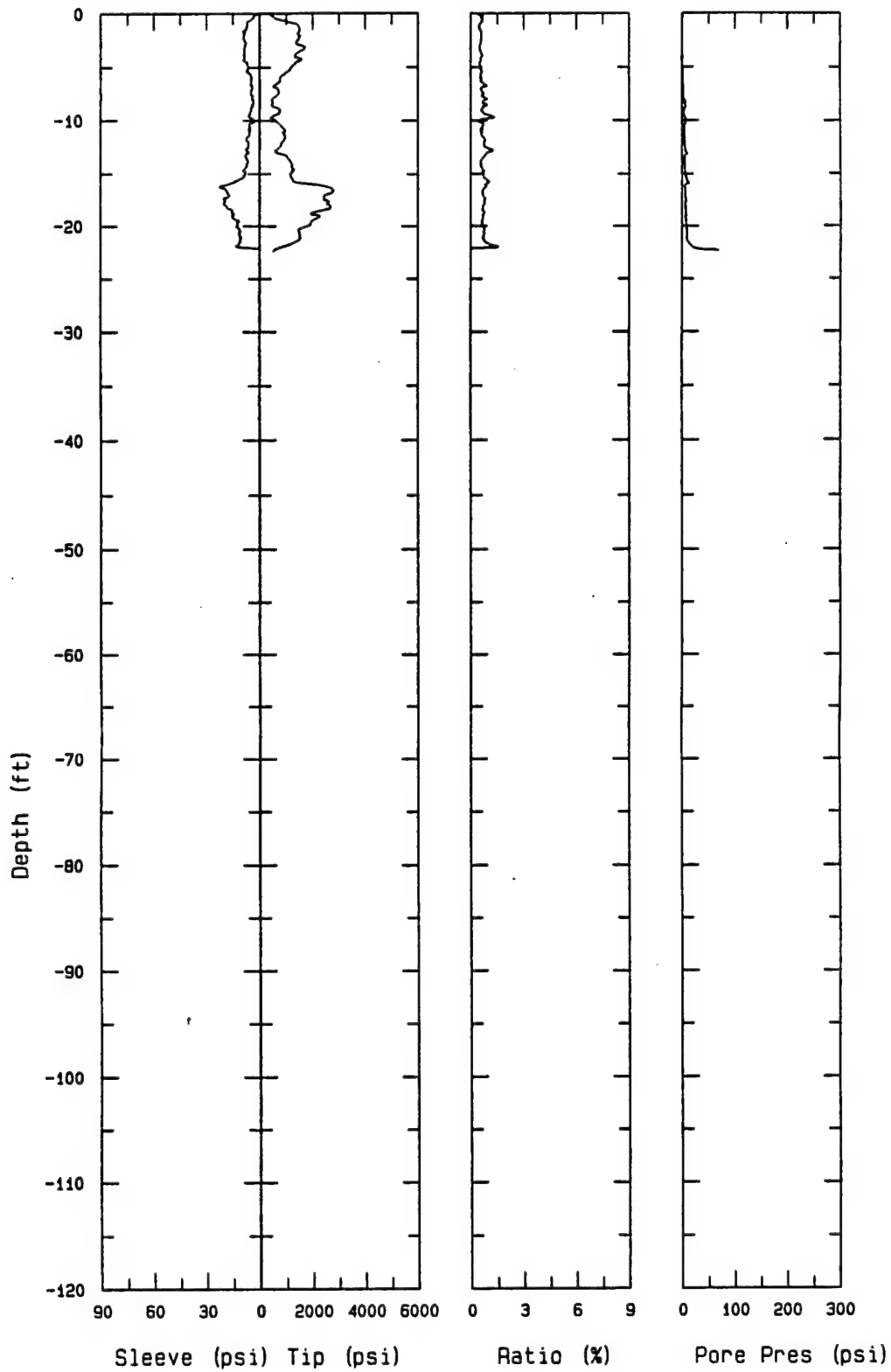
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ABB Environmental, Plattsburgh Air Force Base

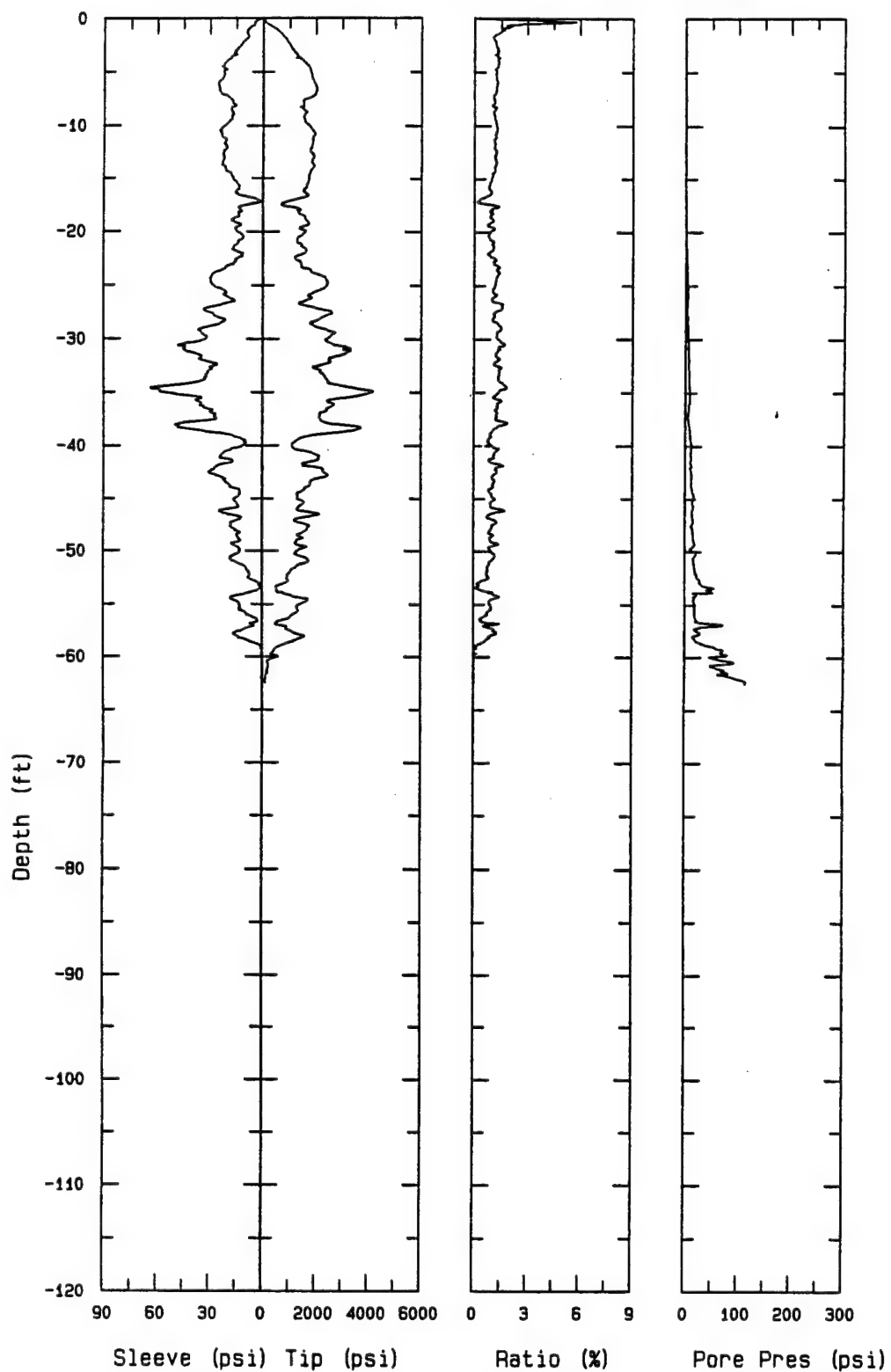


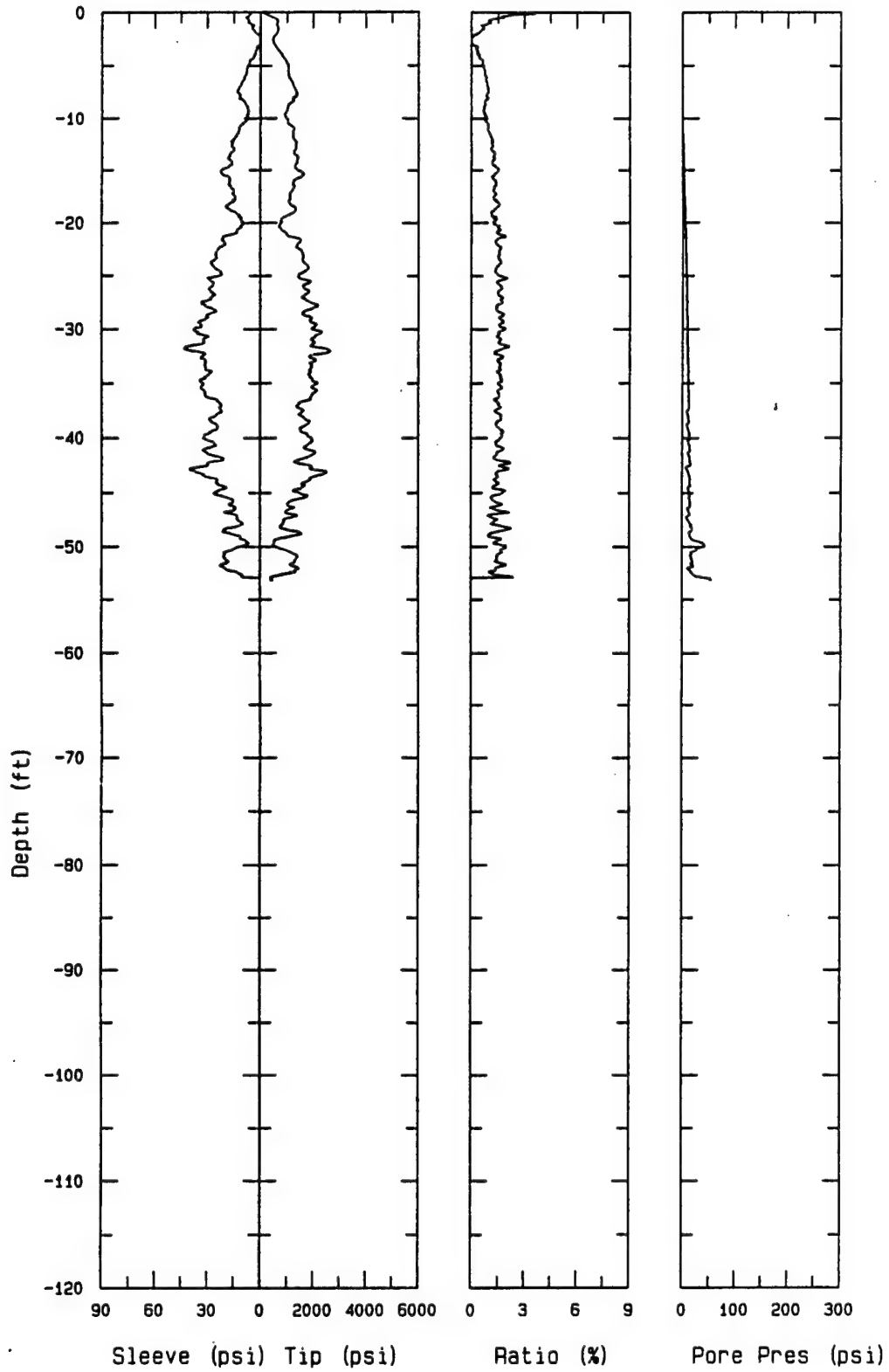


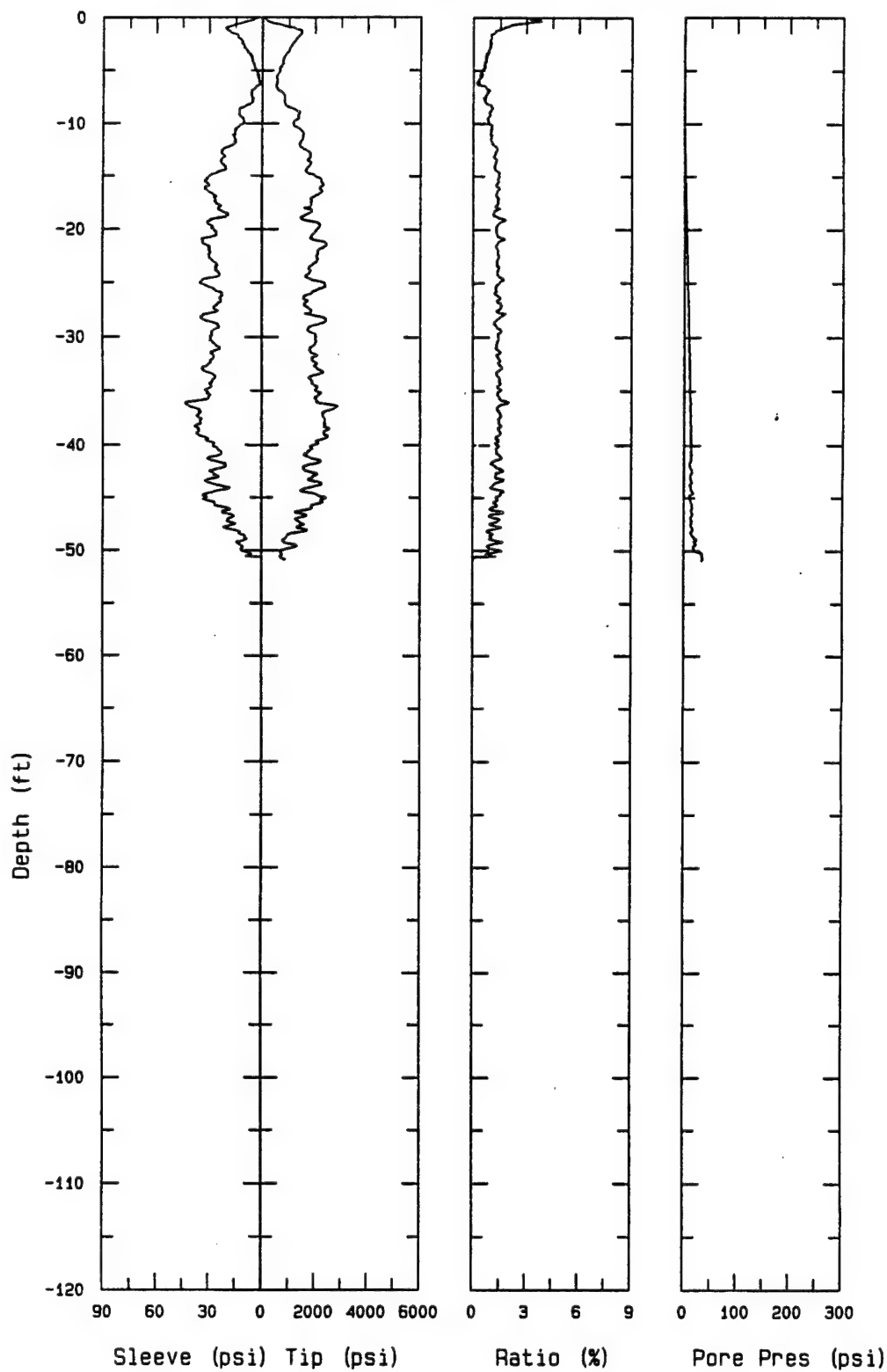
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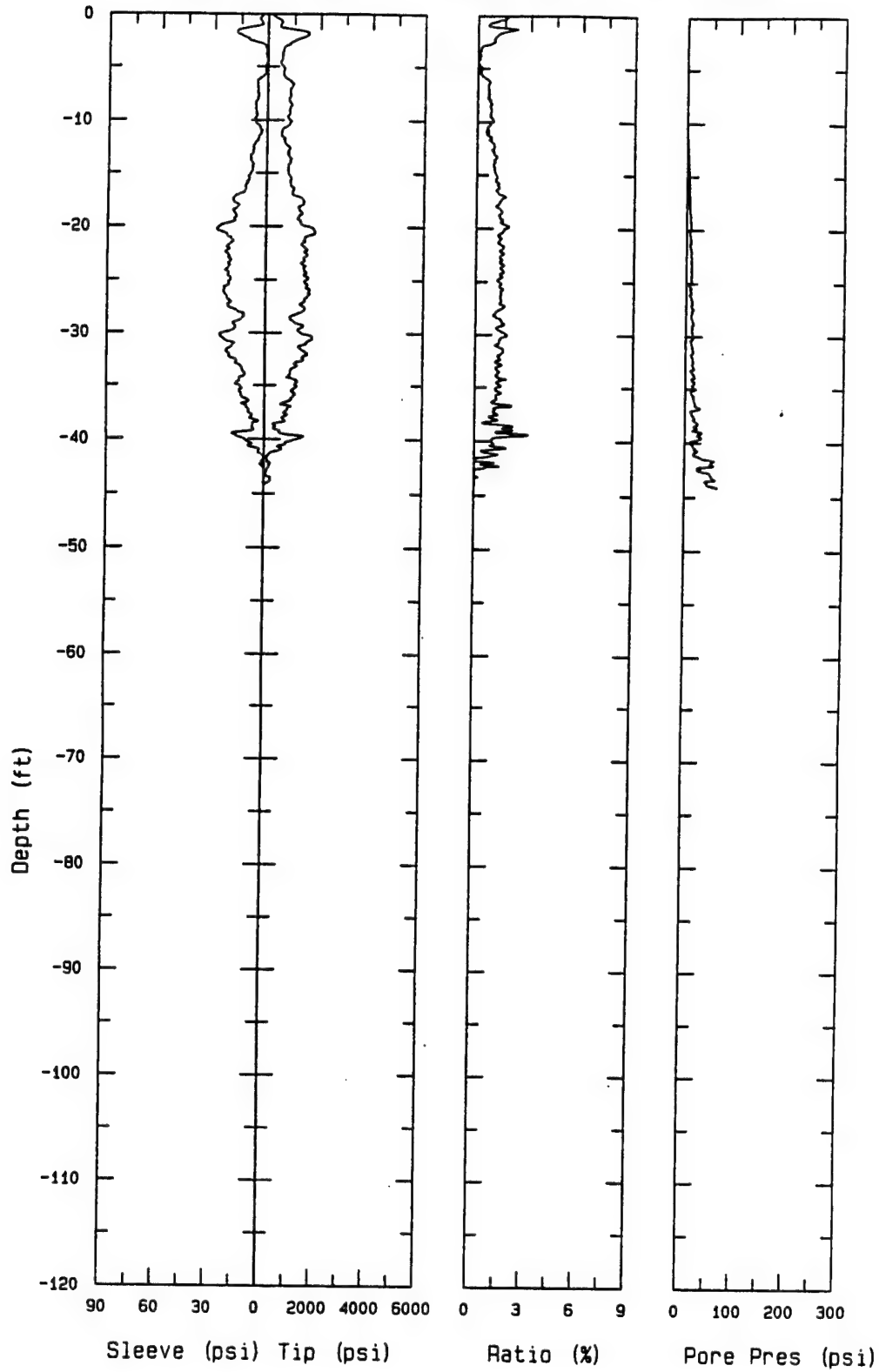












PLATTSBURG AFB, SCREENING DATA 1991

ALL SITES - HITS ONLY

GC FIELD SCREENING RESULTS

(WATER: $\mu\text{g/L}$)

CPT LOCATION	SAMPLE ID	DEPTH (FT)	MATRIX	COMPOUND	CONCENTRATION	DILUTION	QUAL
CP-02-001	02CW00105001XF	50	Water	Toluene	1.4	1.0	J5
CP-02-001	02CW00105501XF	55	Water	Trichloroethene	1.3	1.0	J5
CP-02-002	02CW00202001XF	20	Water	Trichloroethene	47	10.0	J5
CP-02-002	02CW00203701XF	37	Water		ND	1.0	
CP-02-002	02CW00205201XF	52	Water	C-1,2-Dichloroethene	1.1	1.0	
CP-02-002		52		Trichloroethene	21	1.0	
CP-02-002	02CW00205801XF	58	Water		ND	1.0	
CP-02-003	02CW00302301XF	23	Water	Benzene	2.0	1.0	J5
CP-02-003		23		Ethylbenzene	1.4	1.0	J5
CP-02-003		23	Water	C-1,2-Dichloroethene	120	10.0	
CP-02-003	02CW00303201XF	32	Water	C-1,2-Dichloroethene	210	10.0	
CP-02-003		32		Benzene	15	10.0	J5
CP-02-003		32		Ethylbenzene	15	10.0	J5
CP-02-003	02CW00304101XF	41	Water	C-1,2-Dichloroethene	160	33.0	J5
CP-02-003		41		Ethylbenzene	66	33.0	J5
CP-02-003	02CW00305501XF	55	Water	C-1,2-Dichloroethene	84	10.0	
CP-02-003		55		Ethylbenzene	16	10.0	J5
CP-02-003	02CW00306701XF	67	Water	C-1,2-Dichloroethene	1.2	1.0	J5
CP-02-004	02CW00403001XF	30	Water	Trichloroethene	1.0	1.0	J5
CP-02-004	02CW00404601XF	46	Water	Trichloroethene	20	1.0	
CP-02-004	02CW00405601XF	56	Water		ND	1.0	
CP-02-004	02CW00406401XF	64	Water		ND	1.0	
CP-02-005	02CW00501701XF	17	Water	Trichloroethene	6.6	1.0	
CP-02-005	02CW00502801XF	28	Water		ND	1.0	
CP-02-005	02CW00504201XF	42	Water		ND	1.0	
CP-02-005	02CW00504601XF	46	Water		ND	1.0	
CP-02-005	02CW00505001XF	50	Water		ND	1.0	
CP-02-006	02CW00601501XF	15	Water	Trichloroethene	630	20.0	E
CP-02-006	02CW00602401XF	24	Water	C-1,2-Dichloroethene	180	100.0	J1
CP-02-006		24		Trichloroethene	3,400	100.0	E
CP-02-006	02CW00603301XF	33	Water	C-1,2-Dichloroethene	850	100.0	J1
CP-02-006		33		Trichloroethene	3,500	100.0	E
CP-02-006	02CW00604401XF	44	Water	Trichloroethene	430	50.0	
CP-02-006	02CW00605501XF	55	Water	C-1,2-Dichloroethene	11	10.0	J1
CP-02-006		55		Trichloroethene	330	10.0	E
CP-02-006		55		Tetrachloroethene	11	10.0	J5
CP-02-007	02CW00702201XF	22	Water	Trichloroethene	12	1.0	
CP-02-007	02CW00703101XF	31	Water	Trichloroethene	54	10.0	
CP-02-007	02CW00704501XF	45	Water	C-1,2-Dichloroethene	240	100.0	J5
CP-02-007		45		Trichloroethene	4,900	100.0	E
CP-02-007	02CW00705601XF	56	Water	Trichloroethene	26	1.0	J9
CP-02-008	02CW00802801XF	28	Water	C-1,2-Dichloroethene	670	20.0	E
CP-02-008		28		Trichloroethene	52	20.0	J5
CP-02-008	02CW00804301XF	43	Water	C-1,2-Dichloroethene	2,000	50.0	E
CP-02-008		43		Trichloroethene	1,500	50.0	E
CP-02-008	02CW00805201XF	52	Water	C-1,2-Dichloroethene	1,700	100.0	
CP-02-008		52		Trichloroethene	3,200	100.0	E
CP-02-008	02CW00805701XF	57	Water	C-1,2-Dichloroethene	510	100.0	
CP-02-008		57		Trichloroethene	3,300	100.0	E
CP-02-008		57		Benzene	240	100.0	J5
CP-02-008	02CW00807001XF	70	Water		ND	1.0	

PLATTSBURG AFB, SCREENING DATA 1991

ALL SITES - HITS ONLY

GC FIELD SCREENING RESULTS

(WATER: $\mu\text{g/L}$)

PCPT LOCATION	SAMPLE ID	DEPTH (FT)	MATRIX	COMPOUND	CONCENTRATION	DILUTION	QUAL
CP-02-009	02CW00901601XF	16	Water	C-1,2-Dichloroethene	14	1.0	
CP-02-009	02CW00902801XF	28	Water	C-1,2-Dichloroethene	19	1.0	
CP-02-009	02CW00903501XF	35	Water	Benzene	2.8	2.0	J5
CP-02-009		35		C-1,2-Dichloroethene	700	20.0	E
CP-02-009	02CW00904401XF	44	Water	C-1,2-Dichloroethene	10,000	1000.0	
CP-02-009	02CW00905401XF	54	Water	C-1,2-Dichloroethene	790	100.0	
CP-02-009	02CW00906001XF	60	Water	C-1,2-Dichloroethene	20	10.0	J5
CP-02-010	02CW01003001XF	30	Water	Trichloroethene	5.3	1.0	
CP-02-010	02CW01004601XF	46	Water	C-1,2-Dichloroethene	19	1.0	
CP-02-010		46		Trichloroethene	5.5	1.0	
CP-02-010	02CW01005401XF	54	Water		ND	1.0	
CP-02-011	02CW01103501XF	35	Water	Trichloroethene	1.4	1.0	J5
CP-02-011	02CW01104801XF	48	Water	C-1,2-Dichloroethene	17	1.0	
CP-02-011		48		Trichloroethene	6.2	1.0	
CP-02-012	02CW01201501XF	15	Water	C-1,2-Dichloroethene	42	10.0	J5
CP-02-012		15		Trichloroethene	19	10.0	J5
CP-02-012	02CW01202501XF	25	Water	C-1,2-Dichloroethene	2,100	100.0	
CP-02-012		25		Trichloroethene	1,500	100.0	
CP-02-012	02CW01203401XF	34	Water	C-1,2-Dichloroethene	8.7	2.0	J5
CP-02-012		34		Trichloroethene	6.4	2.0	J5
CP-02-013	02CW01301001XF	18	Water		ND	1.0	
CP-02-013	02CW01302001XF	20	Water	Trichloroethene	190	20.0	
CP-02-013	02CW01302801XF	28	Water	C-1,2-Dichloroethene	3.7	2.0	J5
CP-02-013		28		Trichloroethene	8.4	2.0	J5
CP-02-014	02CW01401001XF	10	Water		ND	1.0	
CP-02-014	02CW01402201XF	22	Water	Trichloroethene	150	10.0	
CP-02-015	02CW01500801XF	8	Water	Trichloroethene	1.8	1.0	J5
CP-02-015	02CW01501201XF	12	Water		ND	1.0	
CP-02-015	02CW01502501XF	25	Water	C-1,2-Dichloroethene	1.3	1.0	J5
CP-02-015		25		Trichloroethene	15	1.0	
CP-02-016	02CW01601701XF	17	Water		ND	1.0	
CP-02-016	02CW01603201XF	32	Water		ND	1.0	
CP-02-017	02CW01703501XF	35	Water		ND	1.0	
CP-02-017	02CW01704201XF	42	Water		ND	1.0	
CP-02-017	02CW01705001XF	50	Water		ND	1.0	
CP-02-017	02CW01705801XF	58	Water		ND	1.0	
CP-02-018	02CW01801001XF	10	Water	Trichloroethene	1.4	1.0	J5
CP-02-018	02CW01802001XF	20	Water		ND	1.0	
CP-02-019	02CW01900901XF	9	Water		ND	1.0	
CP-02-019	02CW01901901XF	19	Water	C-1,2-Dichloroethene	16	1.0	
CP-02-020	02CW02003501XF	35	Water	C-1,2-Dichloroethene	290	20.0	
CP-02-020	02CW02004601XF	46	Water	C-1,2-Dichloroethene	27,000	500.0	E
CP-02-020		46		Trichloroethene	500	500.0	J5
CP-02-020		46		Toluene	11,000	500.0	J1
CP-02-020		46		m/p-Xylene	1,100	500.0	J5
CP-02-020	02CW02005901XF	59	Water	C-1,2-Dichloroethene	12	1.0	
CP-02-020	02CW02007001XF	70	Water	C-1,2-Dichloroethene	16	1.0	
CP-02-020		70		Toluene	6.9	1.0	J1
CP-02-020		70		Ethylbenzene	1.2	1.0	J5
CP-02-020		70		m/p-Xylene	4.5	1.0	J5
CP-02-020		70		o-Xylene	1.5	1.0	J5

PLATTSBURG AFB, SCREENING DATA 1991

ALL SITES - HITS ONLY

GC FIELD SCREENING RESULTS

(WATER: µg/L)

PT LOCATION	SAMPLE ID	DEPTH (FT)	MATRIX	COMPOUND	CONCENTRATION	DILUTION	QUAL
CP-02-021	02CW02104601XF	46	Water		ND	1.0	
CP-02-021	02CW02105301XF	53	Water		ND	1.0	
CP-02-022	02CW02201801XF	18	Water		ND	1.0	
CP-02-022	02CW02203201XF	32	Water	C-1,2-Dichloroethene	5.8	1.0	
CP-02-022	02CW02204101XF	41	Water	C-1,2-Dichloroethene	11	1.0	
CP-02-022	02CW02205101XF	51	Water		ND	1.0	
CP-02-023	02CW02301201XF	12	Water		ND	1.0	
CP-02-023	02CW02302201XF	22	Water		ND	1.0	
CP-02-023	02CW02302801XF	28	Water		ND	1.0	
CP-02-023	02CW02303701XF	37	Water		ND	1.0	
CP-02-024	02CW02401001XF	10	Water		ND	1.0	
CP-02-024	02CW02401801XF	18	Water		ND	1.0	
CP-02-024	02CW02403001XF	30	Water		ND	1.0	
CP-02-025	02CW02500801XF	8	Water		ND	1.0	
CP-02-025	02CW02501801XF	18	Water	Trichloroethene	50	5.0	
CP-02-025	02CW02502501XF	25	Water		ND	1.0	
CP-02-026	02CW02605001XF	50	Water		ND	1.0	
CP-02-026	02CW02606201XF	62	Water		ND	1.0	
CP-02-027	02CW02704201XF	42	Water		ND	1.0	
CP-02-028	02CW02800701XF	7	Water		ND	1.0	
CP-02-028	02CW02801401XF	14	Water		ND	1.0	
CP-02-028	02CW02802001XF	20	Water	C-1,2-Dichloroethene	1,500	100.0	
CP-02-029	02CW02901601XF	16	Water		ND	1.0	
CP-02-030	02CW03000701XF	7	Water	Trichloroethene	2.5	1.0	J5
CP-02-030	02CW03001501XF	15	Water	C-1,2-Dichloroethene	2.3	1.0	J1J5
CP-02-031	02CW03100801XF	8	Water	Trichloroethene	11	1.0	
CP-02-031	02CW03101401XF	14	Water	Trichloroethene	420	100.0	J5
CP-02-031	02CW03101901XF	19	Water		ND	1.0	
CP-02-032	02CW03200801XF	8	Water		ND	1.0	
CP-02-032	02CW03201701XF	17	Water	Trichloroethene	23	1.0	
CP-02-032	02CW03202601XF	26	Water		ND	1.0	
CP-02-033	02CW03302001XF	20	Water		ND	1.0	
CP-02-033	02CW03303001XF	30	Water		ND	1.0	
CP-02-033	02CW03304201XF	42	Water		ND	1.0	
CP-02-034	02CW03403701XF	37	Water		ND	1.0	
CP-02-034	02CW03405001XF	50	Water		ND	1.0	
CP-02-035	02CW03501601XF	16	Water	Benzene	5.6	1.0	J1
CP-02-035	02CW03502901XF	29	Water	Benzene	1.4	1.0	J1J5
CP-02-035		29		m/p-Xylene	2.1	1.0	J5
CP-02-035		29		Vinyl Chloride	43	1.0	
CP-02-035	02CW03504001XF	40	Water	Vinyl Chloride	35	1.0	
CP-02-036	02CW03602201XF	22	Water	Benzene	9.3	1.0	J1
CP-02-036	02CW03603201XF	32	Water	Benzene	2.6	1.0	J1J5
CP-02-036		32		Ethylbenzene	1.4	1.0	J5
CP-02-036		32		Vinyl Chloride	13	1.0	J5
CP-02-036	02CW03604201XF	42	Water		ND	1.0	
CP-02-037	02CW03701001XF	10	Water		ND	1.0	
CP-02-037	02CW03702001XF	20	Water		ND	1.0	
CP-02-037	02CW03703201XF	32	Water		ND	1.0	
CP-02-038	02CW03804301XF	43	Water		ND	1.0	
CP-02-039	02CW03902001XF	20	Water	C-1,2-Dichloroethene	500	20.0	J1
CP-02-039		20		Trichloroethene	30	20.0	

DATA QUALIFIER DEFINITIONS

QUALIFIER	DEFINITION
<u>Qualifiers for Organic Data</u>	
J	- Indicates an estimated concentration because results are either below the contract required detection level (CRQL) or quality control criteria were not met.
JJ	- Validation qualifier for concentrations below the CRQL.
U	- Indicates that compound was analyzed but not detected.
UJ	- Indicates that quantitation level was estimated because quality control (QC) criteria were not met.
B	- Indicates analyte was detected in both the sample and the associated laboratory method blank.
E	- Indicates that the analyte concentration exceeded the calibration range of the gas chromatograph/mass spectrograph and that a reanalysis of a diluted sample is required.
D	- Indicates that sample concentration was obtained by dilution to bring result within calibration range.
R	- Indicates that data is unusable because QC criteria were not met.
X	- Laboratory-defined qualifier used to provide additional information not covered by the other qualifiers.

Qualifiers for Inorganic Data

- E - The reported concentration is estimated because of the presence of an interference.
 - J - Indicates an estimated concentration because QC criteria were not met.
 - R - Indicates that data is unusable because QC criteria were not met.
 - M - Duplicate precision criteria were not met.
 - N - Spiked sample recovery not within control limits.
 - s - The reported concentration was determined by the method of standard additions.
 - W - Post-digestion spike for furnace atomic adsorption analysis is outside control limits.
 - [] - Concentration reported is below CRQL.
 - - Duplicate analysis not within control limits.
 - +
- Correlation coefficient for the method of standard additions was less than 0.995

Other Notations

- NR - Analysis not requested.
- NA - Analysis requested but not performed.
- - Compound analyzed but not detected.

SUMMARY TABLES

PHASE I REMEDIAL INVESTIGATION

PROJECT: Plattsburgh

MONITORING WELL SAMPLE ANALYSIS - FT-1 Fire Training Area

Summary Table

VOLATILE ORGANIC COMPOUNDS											
UNITS: ug/L											CRDL
SAMPLE ID:	01MW101XXX02XX	01MW102XXX02XX	01MW103XXX02XX	01MW104XXX02XX	01MW105XXX02XX	01MW106XXX02XX	01MW107XXX02XX	01MW126XXX02XX			
LAB NUMBER:	241230	241252	241648RE	241226	241649	241242	241254	241253			
DATE SAMPLED:	01/17/89	01/17/89	01/18/89	01/17/89	01/18/89	01/17/89	01/17/89	01/17/89			
DATE SAMPLE PREP.:	01/18/89	01/25/89	01/29/89	01/18/89	01/27/89	01/19/89	01/25/89	01/25/89			
DATE SAMPLE ANALYZED:	01/18/89	01/25/89	01/29/89	01/18/89	01/27/89	01/19/89	01/25/89	01/25/89			
MATRIX:	Water	Water	Water	Water	Water	Water	Water	Water			
Chloromethane	-	-	-	-	-	-	-	-	-	-	-
Bromomethane	-	-	-	-	-	-	-	-	-	-	-
Vinyl Chloride	-	-	-	-	-	-	-	-	-	-	-
Chloroethane	-	-	-	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-	-	-	-
Acetone	-	-	-	-	-	-	-	-	-	-	-
Carbon Disulfide	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethene	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloroethene (total)	-	-	-	-	-	-	-	-	-	-	-
Chloroform	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloroethane	-	-	-	-	-	-	-	-	-	-	-
2-Butanone	-	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-	-	-	-
Carbon Tetrachloride	-	-	-	-	-	-	-	-	-	-	-
Vinyl Acetate	-	-	-	-	-	-	-	-	-	-	-
Bromodichloromethane	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloropropane	-	-	-	-	-	-	-	-	-	-	-
cis-1,3-Dichloropropene	-	-	-	-	-	-	-	-	-	-	-
Trichloroethene	-	-	-	-	-	-	-	-	-	-	-
Dibromochloromethane	-	-	-	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane	-	-	-	-	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-	-	-	-	-
Trans-1,3-Dichloropropene	-	-	-	-	-	-	-	-	-	-	-
Bromoform	-	-	-	-	-	-	-	-	-	-	-
4-Methyl-2-Pentanone	-	-	-	-	-	-	-	-	-	-	-
2-Hexanone	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	-	-	-	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	-	-	-	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-	-	-	-
Chlorobenzene	-	-	-	-	-	-	-	-	-	-	-
Ethylbenzene	-	-	-	-	-	-	-	-	-	-	-
Styrene	-	-	-	-	-	-	-	-	-	-	-
Xylenes (Total)	-	-	-	-	-	-	-	-	-	-	-
Dilution Factor	1	1	125	1	6.3	125	1	1	1	1	1

Laboratory Method Blank	CC890118B11	CC890124B23	CC890128A09	CC890118B11	CC890127C09	CC890119C23	CC890124B23	CC890124B23
Associated Equipment Blank	00SB205XXX02XX*	00SB205XXX02XX*	00SB206XXX02XX*	00SB205XXX02XX*	00SB206XXX02XX*	00SB205XXX02XX*	00SB205XXX02XX*	00SB205XXX02XX*
Associated Trip Blank	00TB105XXX02XX	00TB105XXX02XX	00TB106XXX02XX	00TB105XXX02XX	00TB106XXX02XX	00TB105XXX02XX	00TB105XXX02XX	00TB105XXX02XX
Associated Field Blanks	00MH001XXX01XX	00MH001XXX01XX	00MH001XXX01XX	00MH001XXX01XX	00MH001XXX01XX	00MH001XXX01XX	00MH001XXX01XX	00MH001XXX01XX

* = Helo analysis.

Summary Table

VOLATILE ORGANIC COMPOUNDS									
UNITS: ug/L									
CRDL									
SAMPLE ID:	01MWJ27XXX02XX	01MWJ301XXX01XX	01MWJ304XXX01XX	01MWJ306XXX01XX	01MWJ307XXX01XX	01MWJ307XXX01X0	01MWJ308XXX01XX	01MWJ309XXX01XX	
LAB NUMBER:	241651	241653	241654	241238	241246	241250	241251	241655	
DATE SAMPLED:	01/18/89	01/18/89	01/18/89	01/17/89	01/17/89	01/17/89	01/17/89	01/17/89	
DATE SAMPLE PREP.:	01/28/89	01/23/89	01/27/89	01/19/89	01/24/89	01/24/89	01/24/89	01/24/89	
DATE SAMPLE ANALYZED:	01/28/89	01/23/89	01/27/89	01/19/89	01/24/89	01/24/89	01/24/89	01/23/89	
MATRIX:	Water	Water	Water	Water	Water	Water	Water	Water	
Chloromethane	-	-	-	-	-	-	-	-	-
Bromomethane	-	-	-	-	-	-	-	-	-
Vinyl Chloride	-	-	-	-	-	-	-	-	-
Chloroethane	-	-	-	-	-	-	-	-	-
Methylene Chloride	-	-	-	-	-	-	-	-	-
Acetone	-	-	-	-	-	-	-	-	-
Carbon Disulfide	-	-	-	-	-	-	-	-	-
1,1-Dichloroethene	-	-	-	-	-	-	-	-	-
1,1-Dichloroethane	-	-	-	-	-	-	-	-	-
1,2-Dichloroethene (total)	-	-	-	-	-	-	-	-	-
Chloroform	-	1000 D	7300	-	-	-	270	6600	-
1,2-Dichloroethane	-	-	-	-	-	-	-	-	-
2-Butanone	610 J	32 J	R	R	R	R	R	R	R
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-	-
Carbon Tetrachloride	-	-	-	-	-	-	-	-	-
Vinyl Acetate	-	-	-	-	-	-	-	-	-
Bromodichloromethane	-	-	-	-	-	-	-	-	-
1,2-Dichloropropane	-	-	-	-	-	-	-	-	-
cis-1,3-Dichloropropene	-	-	-	-	-	-	-	-	-
Trichloroethene	85	390 D	-	-	2300	2500	-	-	-
Dibromochloromethane	-	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane	-	-	-	-	-	-	16	-	-
Benzene	-	30	-	-	-	-	-	-	-
Trans-1,3-Dichloropropene	-	-	-	-	-	-	-	-	-
Bromoform	-	-	-	-	-	-	-	-	-
4-Methyl-2-Pentanone	-	-	-	-	-	-	-	-	-
2-Hexanone	-	-	-	-	-	-	-	-	-
Tetrachloroethene	-	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	-	-	-	-	-	-	-	-	-
Toluene	-	99	1700 J	-	-	-	-	-	-
Chlorobenzene	-	-	-	-	-	-	-	-	340
Ethylbenzene	-	7	850 J	-	-	-	23	-	540
Styrene	-	-	-	-	-	-	-	-	-
Xylenes (Total)	-	37	3000 J	-	-	-	28	-	1800
Dilution Factor	3.3	1	50	1	14	14	1.5	50	50

[illegible]

* = Held for analysis.

PROJECT: Plattsburgh

MONITORING WELL SAMPLE ANALYSIS - FT-1 Fire Training Area

Summary Table

SAMPLE ID:	01MW309XXX01XD	01MW310XXX01XX	01MW311XXX01XX	01MW312XXX01XX	01MW313XXX01XX	01MW314XXX01XX	01MW315XXX01XX	01MW316XXX01XX
LAB NUMBER:	241656	241657	240573	240457	241233	241235	241658	240003
DATE SAMPLED:	01/18/89	01/18/89	01/13/89	01/12/89	01/17/89	01/17/89	01/18/89	01/12/89
DATE SAMPLE PREP.:	01/28/89	01/23/89	01/16/89	01/16/89	01/18/89	01/19/89	01/27/89	01/12/89
DATE SAMPLE ANALYZED:	01/28/89	01/23/89	01/16/89	01/16/89	01/18/89	01/19/89	01/27/89	01/12/89
MATRIX:	Water	Water	Water	Water	Water	Water	Water	Water

VOLATILE ORGANIC COMPOUNDS
UNITS: ug/L

CRDL								
Chloromethane	10	-	-	-	-	-	-	-
Bromomethane	10	-	-	-	-	-	-	-
Vinyl Chloride	10	-	-	-	-	-	-	-
Chloroethane	10	-	-	-	-	-	-	-
Methylene Chloride	5	-	-	-	-	11	-	-
Acetone	10	-	-	-	-	-	-	-
Carbon Disulfide	5	-	-	-	-	-	-	-
1,1-Dichloroethene	5	-	-	-	-	-	-	-
1,1-Dichloroethane	5	-	-	-	-	-	-	-
1,2-Dichloroethene (total)	5	-	-	-	-	-	-	-
Chloroform	5	7800	7200 D	58	20	-	4300	-
1,2-Dichloroethane	5	-	-	-	-	-	-	-
2-Butanone	10	-	230 J	R	-	20 J	R	85 J
1,1,1-Trichloroethane	5	-	-	-	-	-	-	-
Carbon Tetrachloride	5	-	-	-	-	-	-	-
Vinyl Acetate	10	-	-	-	-	-	-	-
Bromodichloromethane	5	-	-	-	-	-	-	-
1,2-Dichloropropene	5	-	-	-	-	-	-	-
cis-1,3-Dichloropropene	5	-	-	15	10	-	-	-
Trichloroethene	5	-	-	-	-	-	-	-
Dibromochloromethane	5	-	-	-	-	-	-	-
1,1,2-Trichloroethane	5	-	-	-	-	-	-	-
Benzene	5	-	260	-	-	-	550 J	-
Trans-1,3-Dichloropropene	5	-	-	-	-	-	-	-
Bromoform	5	-	-	-	-	-	-	-
4-Methyl-2-Pentanone	10	-	-	-	-	-	-	-
2-Hexanone	10	-	-	-	-	-	-	-
Tetrachloroethene	5	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	5	-	-	-	-	-	-	-
Toluene	5	-	-	-	-	-	-	-
Chlorobenzene	5	310 J	460	-	-	-	4200 J	-
Ethylbenzene	5	-	-	-	-	-	-	-
Styrene	5	510 J	250	-	-	-	470 J	-
Xylenes (Total)	5	2600 J	1000	-	-	13	5000 J	-
Dilution Factor		50	10	1	1	1	28	1
Laboratory Method Blank	CB890128A09	CB890123A09	CB890116C11	CB890116A09	CB890118B11	CB890118B11	CB890127C09	CB890112B11
Associated Equipment Blank	00S8206XXX02XX	00S8206XXX02XX	00S8204XXX02XX	00S8203XXX02XX	00S8205XXX02XX	00S8205XXX02XX	00S8206XXX02XX	00S8202XXX02XX
Associated Trip Blank	00B1106XXX02XX	00B1106XXX02XX	00B1104XXX02XX	00B1103XXX02XX	00B1105XXX02XX	00B1105XXX02XX	00B1105XXX02XX	00B1103XXX02XX
Associated Field Blanks	00MH001XXX01XX	00MH001XXX01XX	00MH001XXX01XX	00MH001XXX01XX	00MH001XXX01XX	00MH001XXX01XX	00MH001XXX01XX	00MH001XXX01XX

* = Hel analysis.

PROJECT: Plattsburgh

Summary Table

SAMPLE ID: 01MWJ317XXX01XX										SAMPLE ID: 01MWJ318XXX01XX										SAMPLE ID: 01MWJ319XXX01XD										SAMPLE ID: 01MWJ336XXX01XX																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
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Chloromethane	10	-	-	-	-	-	-	-	-	0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

★ = Held for analysis.

PROJECT: Plattsburgh

MONITORING WELL SAMPLE ANALYSIS - FT-1 Fire Training Area

Summary Table

SAMPLE ID: 01MW127XX02XX 01MW307XX01XX 01MW309XX01XX 01MW309XX01XD 01MW310XX01XX 01MW336XX01XX
 LAB NUMBER: 241692 241216 241694 241701 241695 241700
 DATE SAMPLED: 01/18/89 01/17/89 01/18/89 01/18/89 01/18/89 01/18/89
 MATRIX: Water Water Water Water Water Water

METHOD 8010		VOLATILE ORGANIC COMPOUNDS					
UNITS: ug/L		DL					
Chloromethane	0.5	-	-	-	-	-	-
Bromomethane	0.5	-	-	-	-	-	-
Vinyl Chloride	0.5	-	-	-	-	-	-
Chloroethane	1	-	-	-	-	580 J	-
Methylene Chloride	0.3	-	-	-	-	-	-
1,1-Dichloroethane	0.4	-	-	-	-	-	-
1,1-Dichloroethene	0.2	-	-	-	-	-	-
1,2-Dichloroethane (total)	0.2	9.4	-	-	-	200	-
Chloroform	0.2	0.8	-	-	-	-	-
1,2-Dichloroethane	0.3	-	-	-	-	-	-
1,1,1-Trichloroethane	0.3	-	-	-	-	-	-
Carbon Tetrachloride	0.3	-	-	-	-	-	-
Bromodichloromethane	0.4	-	-	-	-	-	-
1,2-Dichloropropane	0.2	-	-	-	-	-	-
Cis-1,3-Dichloropropene	0.3	-	-	-	-	-	-
Trichloroethene	0.2	1900	-	-	-	-	100
Dibromochloromethane	0.2	-	-	-	-	-	-
1,1,2-Trichloroethane	0.2	-	-	-	-	-	-
Trans-1,3-Dichloropropene	0.2	-	-	-	-	-	-
2-Chloroethylvinylether	0.4	-	-	-	-	-	-
Bromoform	0.5	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	0.4	-	-	-	-	-	-
Tetrachloroethene	0.2	20	-	-	-	-	-
Chlorobenzene	0.4	1.5	-	-	-	-	-
1,3-Dichlorobenzene	0.2	-	-	-	-	-	-
1,2-Dichlorobenzene	0.2	-	-	-	-	-	-
1,4-Dichlorobenzene	0.2	8.8	-	-	-	-	-
Freon 113	1	NA	500	500	500	NA	NA
Dilution Factor	20	-	-	-	-	500	20
Laboratory Method Blank	P17803	-	-	-	-	-	-
Associated Equipment Blank	00SB206XXX02XX	00SB205XXX02XX	00SB206XXX02XX	00SB206XXX02XX	00SB206XXX02XX	00SB206XXX02XX	00SB206XXX02XX

Summary Table

SEMI-VOLATILE ORGANIC COMPOUNDS														
UNITS: ug/L														
CRDL														
SAMPLE ID:	01MW101XXX02XX	01MW102XXX02XX	01MW103XXX02XX	01MW104XXX02XX	01MW105XXX02XX	01MW106XXX02XX	01MW107XXX02XX	01MW126XXX02XX						
LAB NUMBER:	241230	241252	241648	241226	241649	241242	241254	241253						
DATE SAMPLED:	01/17/89	01/17/89	01/18/89	01/17/89	01/18/89	01/17/89	01/17/89	01/17/89						
DATE SAMPLE PREP.:	01/17/89	01/19/89	01/27/89	01/19/89	01/23/89	01/19/89	01/19/89	01/19/89						
DATE SAMPLE ANALYZED:	01/27/89	01/27/89	01/31/89	01/27/89	01/27/89	02/08/89	01/27/89	01/27/89						
MATRIX:	Water	Water	Water	Water	Water	Water	Water	Water						
Phenol	10	-	-	-	-	-	-	-						
bis(2-Chloroethyl)ether	10	-	-	-	-	-	-	-						
2-Chlorophenol	10	-	-	-	-	-	-	-						
1,3-Dichlorobenzene	10	-	-	-	-	-	-	-						
1,4-Dichlorobenzene	10	-	-	-	-	-	-	-						
Benzyl alcohol	10	-	-	-	-	-	-	-						
1,2-Dichlorobenzene	10	-	-	-	-	-	-	-						
2-Methylphenol	10	-	1200 J	-	-	-	-	-						
bis(2-Chloroisopropyl)ether	10	-	-	-	-	-	-	-						
4-Methylphenol	10	-	-	-	-	-	-	-						
N-Nitroso-di-n-propylamine	10	-	-	-	-	-	-	-						
Hexachloroethane	10	-	-	-	-	-	-	-						
Nitrobenzene	10	-	-	-	-	-	-	-						
Isophorone	10	-	-	-	-	-	-	-						
2-Nitrophenol	10	-	-	-	-	-	-	-						
2,4-Dimethylphenol	10	-	-	-	-	-	-	-						
Benzoic acid	50	-	-	-	-	-	-	-						
bis(2-Chloroethoxy)methane	10	-	-	-	-	-	-	-						
2,4-Dichlorophenol	10	-	-	-	-	-	-	-						
1,2,4-Trichlorobenzene	10	-	-	-	-	-	-	-						
Naphthalene	10	-	3700 J	-	29	940 J	-	-						
4-Chloroaniline	10	-	-	-	-	-	-	-						
Hexachlorobutadiene	10	-	-	-	-	-	-	-						
4-Chloro-3-Methylphenol	10	-	-	-	-	-	-	-						
2-Methylnaphthalene	10	-	9600 J	-	17	2000 J	14	-						
Hexachlorocyclopentadiene	10	-	-	-	-	-	-	-						
2,4,6-Trichlorophenol	10	-	-	-	-	-	-	-						
2,4,5-Trichlorophenol	50	-	-	-	-	-	-	-						
2-Chloronaphthalene	10	-	-	-	-	-	-	-						
2-Nitroaniline	50	-	-	-	-	-	-	-						
Dimethylphthalate	10	-	-	-	-	-	-	-						
Acenaphthylene	10	-	-	-	-	-	-	-						
2,6-Dinitrotoluene	10	-	-	-	-	-	-	-						

* = Held for analysis

PROJECT: Plattsburgh

MONITORING WELL SAMPLE ANALYSIS - FT-1 Fire Training Area

Summary Table

SAMPLE ID:	01MW101XXX02XX	01MW102XXX02XX	01MW103XXX02XX	01MW104XXX02XX	01MW105XXX02XX	01MW106XXX02XX	01MW107XXX02XX	01MW126XXX02XX
LAB NUMBER:	241230	241252	241252	241226	241649	241242	241254	241253
DATE SAMPLED:	01/17/89	01/17/89	01/18/89	01/17/89	01/18/89	01/17/89	01/17/89	01/17/89
DATE SAMPLE PREP.:	01/19/89	01/19/89	01/27/89	01/19/89	01/23/89	01/19/89	01/19/89	01/19/89
DATE SAMPLE ANALYZED:	01/27/89	01/27/89	01/31/89	01/27/89	01/27/89	02/08/89	01/27/89	01/27/89
MATRIX:	Water	Water	Water	Water	Water	Water	Water	Water

SEMI-VOLATILE ORGANIC COMPOUNDS
UNITS: ug/L CRDL

3-Nitroaniline	50	-	-	-	-	-	-	-
Acenaphthene	10	-	-	-	-	-	-	-
2,4-Dinitrophenol	50	-	-	-	-	-	-	-
4-Nitrophenol	50	-	-	-	-	-	-	-
Dibenzofuran	10	-	-	-	-	-	-	-
2,4-Dinitrotoluene	10	-	-	-	-	-	-	-
Diethylphthalate	10	-	-	-	-	-	-	-
4-Chlorophenyl-phenylether	10	-	-	-	-	-	-	-
Fluorene	10	-	-	-	-	-	-	-
4-Nitroaniline	50	-	-	-	-	-	-	-
4,6-Dinitro-2-methylphenol	50	-	-	-	-	-	-	-
N-Nitrosodiphenylamine	10	-	-	-	-	-	-	-
4-Bromophenyl-phenylether	10	-	-	-	-	-	-	-
Hexachlorobenzene	10	-	-	-	-	-	-	-
Pentachlorophenol	50	-	-	-	-	-	-	-
Phenanthrene	10	-	-	-	-	-	-	-
Anthracene	10	-	-	-	-	-	-	-
Di-n-butylphthalate	10	-	-	-	-	-	-	-
Fluoranthene	10	-	-	-	-	-	-	-
Pyrene	10	-	-	-	-	-	-	-
Butylbenzylphthalate	10	-	-	-	-	-	-	-
3,3'-Dichlorobenzidine	20	-	-	-	-	-	-	-
Benzo(a)Anthracene	10	-	-	-	-	-	-	-
Chrysene	10	-	-	-	-	-	-	-
bis(2-Ethylhexyl)phthalate	10	-	-	-	-	-	-	-
Di-n-octylphthalate	10	-	-	-	-	-	-	-
Benzo(b)Fluoranthene	10	-	-	-	-	-	-	-
Benzo(k)Fluoranthene	10	-	-	-	-	-	-	-
Benzo(a)Pyrene	10	-	-	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	10	-	-	-	-	-	-	-
Dibenz(a,h)anthracene	10	-	-	-	-	-	-	-
Benzo(g,h,i,)perylene	10	-	-	-	-	-	-	-
Dilution Factor	1	1	70	1	1	8	1	1
Laboratory Method Blank	GJ04262C15	GH041353A16	G3J42983C15	GJ04262C15	GH042079C16	GH041353A16	GH041353A16	GH041353A16
Associated Equipment Blank	00SB205XXX02XX*	00SB205XXX02XX*	00SB206XXX02XX	00SB205XXX02XX*	00SB206XXX02XX*	00SB205XXX02XX*	00SB205XXX02XX*	00SB205XXX02XX*
Associated Field Blanks	00HH001XXX01XX	00HH001XXX01XX	00HH001XXX01XX	00HH001XXX01XX	00HH001XXX01XX	00HH001XXX01XX	00HH001XXX01XX	00HH001XXX01XX

* = for analysis

PROJECT: Plattsburgh

MONITORING WELL SAMPLE ANALYSIS - FT-1 Fire Training Area

Summary Table

SAMPLE ID:	01MW127XXX02XX	01MW301XXX01XX	01MW304XXX01XX	01MW306XXX01XX	01MW307XXX01XX	01MW308XXX01XX	01MW309XXX01XX
LAB NUMBER:	241651	241653	241654	241238	241246	241251	241655
DATE SAMPLED:	01/18/89	01/18/89	01/18/89	01/17/89	01/17/89	01/17/89	01/18/89
DATE SAMPLE PREP.:	01/23/89	01/23/89	01/23/89	01/19/89	01/19/89	01/19/89	02/04/89
DATE SAMPLE ANALYZED:	01/26/89	01/26/89	01/26/89	01/27/89	01/27/89	01/27/89	02/26/89
MATRIX:	Water	Water	Water	Water	Water	Water	Water

SEMI-VOLATILE ORGANIC COMPOUNDS
UNITS: ug/L

CRDL	50	50	50	50	50	50	50
3-Nitroaniline	-	-	-	-	-	-	-
Acenaphthene	-	-	-	-	-	-	-
2,4-Dinitrophenol	-	-	-	-	-	-	-
4-Nitrophenol	-	-	-	-	-	-	-
Dibenzofuran	-	-	-	-	-	-	-
2,4-Dinitrotoluene	-	-	-	-	-	-	-
Diethylphthalate	-	-	-	-	-	-	-
4-Chlorophenyl-phenylether	-	-	-	-	-	-	-
Fluorene	-	-	-	-	-	-	-
4-Nitroaniline	-	-	-	-	-	-	-
4,6-Dinitro-2-methylphenol	-	-	-	-	-	-	-
N-Nitrosodiphenylamine	-	-	-	-	-	-	-
4-Bromophenyl-phenylether	-	-	-	-	-	-	-
Hexachlorobenzene	-	-	-	-	-	-	-
Pentachlorophenol	-	-	-	-	-	-	-
Phenanthrene	-	-	-	-	-	-	-
Anthracene	-	-	-	-	-	-	-
Di-n-butylphthalate	-	-	-	-	-	-	-
Fluoranthene	-	-	-	-	-	-	-
Pyrene	-	-	-	-	-	-	-
Butylbenzylphthalate	-	-	-	-	-	-	-
3,3'-Dichlorobenzidine	-	-	-	-	-	-	-
Benzo(a)Anthracene	-	-	-	-	-	-	-
Chrysene	-	-	-	-	-	-	-
bis(2-Ethylhexyl)phthalate	-	-	-	-	-	-	-
Di-n-octylphthalate	-	-	-	-	-	-	-
Benzo(b)Fluoranthene	-	-	-	-	-	-	-
Benzo(k)Fluoranthene	-	-	-	-	-	-	-
Benzo(a)Pyrene	-	-	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	-	-	-	-	-	-	-
Dibenz(a,h)anthracene	-	-	-	-	-	-	-
Benzo(g,h,i)perylene	-	-	-	-	-	-	-
Dilution Factor	1	1	1	1	1	1	1
Laboratory Method Blank	GH042079C16	GH042079C16	GH042079C16	GH04262C15	GH041353A16	GH041353A16	GH041353A16
Associated Equipment Blank	00SB206XXX02XX	00SB206XXX02XX	00SB206XXX02XX	00SB205XXX02XX*	00SB205XXX02XX*	00SB205XXX02XX*	00SB206XXX02XX
Associated Field Blanks	00MH001XXX01XX	00MH001XXX01XX	00MH001XXX01XX	00MH001XXX01XX	00MH001XXX01XX	00MH001XXX01XX	00MH001XXX01XX

* = for analysis

MONITORING WELL SAMPLE ANALYSIS - FT-1 Fire Training Area

[illegible]SEMI-VOLATILE ORGANIC COMPOUNDS
UNITS: ug/L
CRDL[illegible]

* = Held for analysis

PROJECT: Plattsburgh

Summary Table

[illegible]

for analysis

MONITORING WELL SAMPLE ANALYSIS - FT-1 Fire Training Area

* = Held for analysis

MONITORING WELL SAMPLE ANALYSIS - FT-1 Fire Training Area

SAMPLE ID:	01MW317XXXX01XX	01MW318XXXX01XX	01MW319XXXX01XX	01MW336XXXX01XX	01MW337XXXX01XX
LAB NUMBER:	239995	241659	241663	241664	241672
DATE SAMPLED:	1/11/89	01/18/89	01/18/89	01/18/89	01/18/89
DATE SAMPLE PREP.:	1/13/89	01/23/89	01/23/89	01/22/89	01/22/89
DATE SAMPLE ANALYZED:	1/17/89	01/26/89	01/26/89	01/25/89	01/25/89
MATRIX:	Water	Water	Water	Water	Water

SEMI-VOLATILE ORGANIC COMPOUNDS	CRDL	UNITS: ug/L
3-Nitroaniline	50	
Acenaphthene	10	
2,4-Dinitrophenol	50	
4-Nitrophenol	50	
Dibenzofuran	10	
2,4-Dinitrotoluene	10	
Diethylphthalate	10	
4-Chlorophenyl-phenylether	10	
Fluorene	10	
4-Nitroaniline	50	
4,6-Dinitro-2-methylphenol	50	
N-Nitrosodiphenylamine	10	
4-Bromophenyl-phenylether	10	
Hexachlorobenzene	10	
Pentachlorophenol	50	
Phenanthrene	10	
Anthracene	10	
Di-n-butylphthalate	10	
Fluoranthene	10	
Pyrene	10	
Butylbenzylphthalate	10	
3,3'-Dichlorobenzidine	20	
Benzo(a)Anthracene	10	
Chrysene	10	
bis(2-Ethylhexyl)phthalate	10	270 J
Di-n-octylphthalate	10	
Benzo(b)Fluoranthene	10	
Benzo(k)Fluoranthene	10	
Benzo(a)Pyrene	10	
Indeno(1,2,3-cd)pyrene	10	
Dibenz(a,h)anthracene	10	
Benzo(g,h,i)perylene	10	
Dilution Factor	1	
Laboratory Method Blank		
Associated Equipment Blank		
Associated Field Blanks		

*** = for analysis**

MONITORING WELL SAMPLE ANALYSIS - FT-1 Fire Training Area

MONITORING WELL SAMPLE ANALYSIS - FT-1 Fire Training Area

MONITORING WELL SAMPLE ANALYSIS - FT-1 Fire Training Area

MONITORING WELL SAMPLE ANALYSIS - FT-1 Fire Training Area

SAMPLE ID:	01MWJ127XXXXX02XX	01MWJ306XXXXX01XX	01MWJ307XXXXX01XX	01MWJ308XXXXX01XX	01MWJ309XXXXX01XX	01MWJ309XXXXX01XD	01MWJ310XXXXX01XX
LAB NUMBER:	241683	241259	241261	241262	241684	241685	241686
DATE SAMPLED:	01/18/89	1/17/89	1/17/89	1/17/89	01/18/89	01/18/89	01/18/89
DATE SAMPLE PREP.: :	01/20/89	1/23/89	1/23/89	1/23/89	01/20/89	01/20/89	01/20/89
DATE SAMPLE ANALYZED:	01/25/89	1/23/89	1/23/89	1/23/89	01/25/89	01/25/89	01/25/89
MATRIX:	Water	Water	Water	Water	Water	Water	Water
							01MWJ311XXXXX01XX
							240587
							1/13/89
							01/20/89
							1/23/89
							01/25/89
							Water
							Water

METALS UNITS: ug/L	ANALYTICAL METHOD		CRDL
	P/F	5	
Lead			
Laboratory Method Blank	15926E	00S8206XXX02XX	00S8206XXX02XX
Associated Equipment Blank	15926E	00MH001XXX01XX	00MH001XXX01XX
Associated Field Blanks	15926E	0001201XXX02XX	0001201XXX02XX

MONITORING WELL SAMPLE ANALYSIS - FT-1 Fire Training Area

SAMPLE ID:	LAB NUMBER:	DATE SAMPLED:	DATE SAMPLE PREP.:	DATE SAMPLE ANALYZED:	MATRIX:
01HWJ312XXXX01XX	240499	1/12/89	1/23/89	1/23/89	Water
01HWJ313XXXX01XX	241257	1/12/89	1/23/89	1/23/89	Water
01HWJ314XXXX01XX	241258	1/17/89	1/23/89	1/23/89	Water
01HWJ315XXXX01XX	241687	1/18/89	01/20/89	01/25/89	Water
01HWJ316XXXX01XX	240045	1/11/89	1/23/89	1/23/89	Water
01HWJ317XXXX01XX	240040	1/11/89	1/23/89	1/23/89	Water
01HWJ318XXXX01XX	241688	01/18/89	01/20/89	01/25/89	Water
01HWJ319XXXX01XX	241689	01/18/89	01/20/89	01/25/89	Water

METALS UNITS: ug/L	ANALYTICAL METHOD		P/F	5	10	15926E	15926E	15926E	15926E	15926E
	METHOD	CRDL								
Lead										
Laboratory Method Blank	15926C					00S8203XXX02XX	00S8205XXX02XX	00S8203XXX02XX	00S8205XXX02XX	00S8206XXX02XX
Associated Equipment Blank	00S8203XXX01XX	00S8205XXX01XX				00S8203XXX01XX	00S8205XXX01XX	00S8203XXX01XX	00S8205XXX01XX	00S8206XXX01XX
Associated Field Blanks	00D1201XXX02XX	00D1201XXX02XX				00D1201XXX02XX	00D1201XXX02XX	00D1201XXX02XX	00D1201XXX02XX	00D1201XXX02XX

PROJECT: Plattsburgh

MONITORING WELL SAMPLE ANALYSIS - FT-1 Fire Training Area

Summary Table

SAMPLE ID: 01MW319XXX01XD 01MW336XXX01XX
 LAB NUMBER: 241690 241691
 DATE SAMPLED: 01/18/89 01/18/89
 DATE SAMPLE PREP.: 01/20/89 01/20/89
 DATE SAMPLE ANALYZED: 01/25/89 01/25/89
 MATRIX: Water Water

METALS ANALYTICAL
 UNITS: ug/L METHOD CRDL

Lead P/F 5

Laboratory Method Blank 15926E
 Associated Equipment Blank 00S8206XXX02XX 00S8206XXX02XX
 Associated Field Blanks 00HH001XXX01XX 00HH001XXX01XX

Summary Table

SAMPLE ID: 01MW301XXX01XX 01MW304XXX01XX 01MW337XXX01XX
 LAB NUMBER: 241697 241698 241699
 DATE SAMPLED: 01/18/89 01/18/89 01/18/89
 DATE SAMPLE PREP.: 01/24/89 01/24/89 01/24/89
 DATE SAMPLE ANALYZED: 02/02/89 02/02/89 02/02/89
 MATRIX: Water Water Water

METALS COMPOUNDS	ANALYTICAL	UNITS: ug/L	METHOD	CRDL
Aluminum	P	200		
Antimony	P	60		
Arsenic	F	10		15
Barium	P	200		
Beryllium	P	5		
Cadmium	P	5		
Calcium	P	5000		98400
Chromium	P	10		
Cobalt	P	50		
Copper	P	25		
Iron	P	100		20800
Lead	P/F	5		
Magnesium	P	5000		16300 J
Manganese	P	15		79
Mercury	CV	0.20		
Nickel	P	40		
Potassium	P	5000		
Selenium	F	5		R
Silver	P	10		
Sodium	P	5000		6420
Thallium	F	10		
Vanadium	P	50		
Zinc	P	20		151
Laboratory Method Blank				15926E
Associated Equipment Blank				00SB206XXX02XX 00SR206XXX02XX
Associated Field Blank				00MH001XXX01XX 00MH001XXX01XX

PROJECT: Plattsburgh

MONITORING WELL SAMPLE ANALYSIS - FT-1 Fire Training Area

Summary Table

SAMPLE ID: 01MW108XXX02XX 01MW305XXX01XX
 LAB NUMBER: 241882 241880
 DATE SAMPLED: 01/19/89 01/19/89
 DATE SAMPLE PREP.: 01/25/89 01/24/89
 DATE SAMPLE ANALYZED: 01/25/89 01/24/89
 MATRIX: Product * Product *

VOLATILE ORGANIC COMPOUNDS	UNITS: ug/kg	CRDL
Chloromethane	10	-
Bromomethane	10	-
Vinyl Chloride	10	-
Chloroethane	10	-
Methylene Chloride	5	-
Acetone	10	-
Carbon Disulfide	5	-
1,1-Dichloroethane	5	-
1,1-Dichloroethane	5	-
1,2-Dichloroethane (total)	5	-
1,2-Dichloroethane	5	840000
Chloroform	5	-
1,2-Dichloroethane	5	-
2-Butanone	10	R
1,1,1-Trichloroethane	5	-
Carbon Tetrachloride	5	-
Vinyl Acetate	10	-
Bromodichloromethane	5	-
1,2-Dichloropropane	5	-
cis-1,3-Dichloropropene	5	-
Trichloroethene	5	11000000
Dibromochloromethane	5	-
1,1,2-Trichloroethane	5	-
Benzene	5	-
Trans-1,3-Dichloropropene	5	-
Bromoform	5	-
4-Methyl-2-Pentanone	10	-
2-Hexanone	10	-
Tetrachloroethene	5	-
1,1,2,2-Tetrachloroethane	5	-
Toluene	5	1800000
Chlorobenzene	5	-
Ethylbenzene	5	1000000
Styrene	5	-
Xylenes (Total)	5	4600000
Dilution Factor		770
		20

Laboratory Method Blank C8890125A12 CN042278812
 Associated Equipment Blank 00SB207XXX02XX**00SB207XXX02XX**
 Associated Trip Blank 00BT107XXX02XX 00BT107XXX02XX

* 1um level analysis. ** = Held for analysis.

Summary Table

SAMPLE ID: 01MW108XXX02XX 01MW305XXX01XX
 LAB NUMBER: 241882 241880
 DATE SAMPLED: 01/19/89 01/19/89
 DATE SAMPLE PREP.: 01/25/89 01/25/89
 DATE SAMPLE ANALYZED: 01/31/89 01/30/89
 MATRIX: Product ** Product **

SEMI-VOLATILE ORGANIC COMPOUNDS
 UNITS: ug/kg CRDL

Phenol	330	-	-
bis(2-Chloroethyl)ether	330	-	-
2-Chlorophenol	330	-	-
1,3-Dichlorobenzene	330	-	-
1,4-Dichlorobenzene	330	290000	-
Benzyl alcohol	330	-	-
1,2-Dichlorobenzene	330	1300000	250000
2-Methylphenol	330	-	-
bis(2-Chloroisopropyl)ether	330	-	-
4-Methylphenol	330	-	-
N-Nitroso-di-n-propylamine	330	-	-
Hexachloroethane	330	-	-
Nitrobenzene	330	-	-
Isophorone	330	-	-
2-Nitrophenol	330	-	-
2,4-Dimethylphenol	330	-	-
Benzoic acid	1600	-	-
bis(2-Chloroethoxy)methane	330	-	-
2,4-Dichlorophenol	330	-	-
1,2,4-Trichlorobenzene	330	1200000	1100000
Naphthalene	330	-	-
4-Chloroaniline	330	-	-
Hexachlorobutadiene	330	-	-
4-Chloro-3-Methylphenol	330	-	-
2-Methylnaphthalene	330	2000000	1800000
Hexachlorocyclopentadiene	330	-	-
2,4,6-Trichlorophenol	330	-	-
2,4,5-Trichlorophenol	1600	-	-
2-Chloronaphthalene	330	-	-
2-Nitroaniline	1600	-	-
Dimethylphthalate	330	-	-
Acenaphthylene	330	-	-
2,6-Dinitrotoluene	330	-	-

* = Held for analysis, ** = Medium level analysis.

PROJECT: Plattsburgh

MONITORING WELL SAMPLE ANALYSIS - FT-1 Fire Training Area

Summary Table

SAMPLE ID: 01MW108XXX02XX 01MW305XXX01XX
 LAB NUMBER: 241882 241880
 DATE SAMPLED: 01/19/89 01/19/89
 DATE SAMPLE PREP.: 01/25/89 01/25/89
 DATE SAMPLE ANALYZED: 01/31/89 01/30/89
 MATRIX: Product ** Product **

SEMI-VOLATILE ORGANIC COMPOUNDS
UNITS: ug/kg CRDL

3-Nitroaniline	1600	-	-	-
Acenaphthene	330	-	-	-
2,4-Dinitrophenol	1600	-	-	-
4-Nitrophenol	1600	-	-	-
Dibenzofuran	330	-	-	-
2,4-Dinitrotoluene	330	-	-	-
Diethylphthalate	330	-	-	R
4-Chlorophenyl-phenylether	330	-	-	-
Fluorene	330	-	-	-
4-Nitroaniline	1600	-	-	-
4,6-Dinitro-2-methylphenol	1600	-	-	-
N-Nitrosodiphenylamine	330	-	-	-
4-Bromophenyl-phenylether	330	-	-	-
Hexachlorobenzene	330	-	-	-
Pentachlorophenol	1600	-	-	-
Phenanthrene	330	-	-	-
Anthracene	330	-	-	-
Di-n-butylphthalate	330	-	-	-
Fluoranthene	330	-	-	-
Pyrene	330	-	-	-
Butylbenzylphthalate	330	-	-	-
3,3'-Dichlorobenzidine	660	-	-	-
Benzo(a)Anthracene	330	-	-	-
Chrysene	330	-	-	-
bis(2-Ethylhexyl)phthalate	330	-	-	-
Di-n-octylphthalate	330	-	-	-
Benzo(b)Fluoranthene	330	-	-	-
Benzo(k)Fluoranthene	330	-	-	-
Benzo(a)Pyrene	330	-	-	-
Indeno(1,2,3-cd)pyrene	330	-	-	-
Dibenz(a,h)anthracene	330	-	-	-
Benzo(g,h,i,)perylene	330	-	-	-

Dilution Factor

10 10

Laboratory Method Blank
 Associated Equipment Blank

G2J42321A04 G2J42321A04
 00S8207XXX02XX* 00S8207XXX02XX*

* = H or analysis, ** = Medium level analysis.

Summary Table

SAMPLE ID: 01MW108XX02XX 01MW305XXX01XX
 LAB NUMBER: 241888 241886
 DATE SAMPLED: 01/19/89 01/19/89
 DATE SAMPLE PREP.: 01/30/89 01/30/89
 DATE SAMPLE ANALYZED: 02/01/89 02/01/89
 MATRIX: Product Product

METALS	ANALYTICAL		
UNITS: mg/kg	METHOD	CRDL	
Aluminum	P	40	-
Antimony	P	12	-
Arsenic	F	2	-
Barium	P	40	-
Beryllium	P	1	-
Cadmium	P	1	-
Calcium	P	1000	-
Chromium	P	2	-
Cobalt	P	10	-
Copper	P	5	-
Iron	P	20	200 J
Lead	P/F	1	587
Magnesium	P	1000	-
Manganese	P	3	-
Mercury	CV	0.1	-
Nickel	P	8	-
Potassium	P	1000	-
Selenium	F	1	R
Silver	P	2	-
Sodium	P	1000	-
Thallium	F	2	-
Vanadium	P	10	-
Zinc	P	4	47 J
Percent Solids		28	22
Laboratory Method Blank		15905C	15905C
Associated Equipment Blank		00SB207XXX02XX	00SB207XXX02XX
Associated Field Blank		00MH001XXX01XX	00MH001XXX01XX

Summary Table

SAMPLE LOCATION:		MW-138	MW-308	MW-309	MW-310	MW-311	MW-312	MW-313	MW-336
SAMPLE ID:		01MW13802202XX	01MW30803002XX	01MW30902002XX	01MW31002702XX	01MW31101002XX	01MW31201602XX	01MW31303502XX	01MW33603502XX
LAB NUMBER:		267483	267491	267492	267493	267519	267518	267490	267497
DATE SAMPLED:		6/12/89	6/13/89	6/13/89	6/13/89	6/13/89	6/13/89	6/12/89	6/13/89
DATE ANALYZED:		6/16/89	6/16/89	6/19/89	6/19/89	6/19/89	6/19/89	6/16/89	6/16/89
ANALYTE	CRQL								
Chloromethane	10	-	-	-	-	-	-	-	-
Bromomethane	10	-	-	-	-	-	-	-	-
Vinyl Chloride	10	-	-	-	-	-	-	-	-
Chloroethane	10	-	-	-	-	-	-	-	-
Methylene Chloride	5	-	-	-	-	-	-	-	-
Acetone	10	-	-	-	-	-	-	-	-
Carbon Disulfide	5	-	-	-	-	-	-	-	-
1,1-Dichloroethene	5	-	-	-	-	-	-	-	-
1,1-Dichloroethane	5	-	-	-	-	-	-	-	-
1,2-Dichloroethene (total)	5	-	-	-	8500	46	22	-	190
Chloroform	5	-	290 D	5600	-	-	-	-	-
1,2-Dichloroethane	5	-	-	-	-	-	-	-	-
2-Butanone	10	32	-	-	-	R	-	-	28 J
1,1,1-Trichloroethane	5	-	-	-	-	-	-	-	-
Carbon Tetrachloride	5	-	-	-	-	-	-	-	-
Vinyl Acetate	10	-	-	-	-	-	-	-	-
Bromodichloromethane	5	-	-	-	-	-	-	-	-
1,2-Dichloropropane	5	-	-	-	-	-	-	-	-
Cis-1,3-Dichloropropene	5	-	-	-	-	-	-	-	-
Trichloroethene	5	-	-	-	-	14	10	30	110
Dibromochloromethane	5	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane	5	-	-	-	-	-	-	-	-
Benzene	5	-	43	420	510	-	-	-	19
Trans-1,3-Dichloropropene	5	-	-	-	-	-	-	-	-
Bromoform	5	-	-	-	-	-	-	-	-
4-Methyl-2-Pentanone	10	-	-	-	-	-	-	-	-
2-Hexanone	10	-	-	-	-	-	-	-	-
Tetrachloroethene	5	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	5	6	-	-	-	-	-	-	-
Toluene	5	-	-	260	520	-	-	-	-
Chlorobenzene	5	-	-	-	-	-	-	-	-
Ethylbenzene	5	-	150	440	340	-	-	-	-
Styrene	5	-	-	-	-	-	-	-	-
Xylenes (Total)	5	5	91	1600	1300	-	-	-	-
Acrolein	20	-	-	-	-	R	-	-	-
Acrylonitrile	26	-	-	-	-	-	-	-	-
Dilution Factor:		1	1	40	56	1	1	1	1
Associated Method Blank:		C8890616A19	C8890618B19	C8890618B19	C8890618B19	C8890618B11	C8890618B11	C8890616A19	C8890616A19
Associated Equipment Blank:		00S806128901	00S806138902*	00S806138902*	00S806138902*	00S806138902*	00S806138902*	00S806128901	00S806138902*
Associated Trip Blank:		00T806128902	00T806128902	00T806128902	00T806128902	00T806128902	00T806128902	00T806128902	00T806128902
Associated Field Blank:		00M106138901	00M106138901	00M106138901	00M106138901	00M106138901	00M106138901	00M106138901	00M106138901

* = for analysis.

Summary Table

SAMPLE LOCATION: MW-336 DUP
 SAMPLE ID: 01MW336035020X
 LAB NUMBER: 267494
 DATE SAMPLED: 6/13/89
 DATE ANALYZED: 6/19/89

ANALYTE	CROL	
Chloromethane	10	-
Bromomethane	10	-
Vinyl Chloride	10	-
Chloroethane	10	-
Methylene Chloride	5	-
Acetone	10	-
Carbon Disulfide	5	-
1,1-Dichloroethene	5	-
1,1-Dichloroethane	5	-
1,2-Dichloroethene (total)	5	220
Chloroform	5	-
1,2-Dichloroethane	5	-
2-Butanone	10	-
1,1,1-Trichloroethane	5	-
Carbon Tetrachloride	5	-
Vinyl Acetate	10	-
Bromodichloromethane	5	-
1,2-Dichloropropane	5	-
Cis-1,3-Dichloropropene	5	-
Trichloroethene	5	140
Dibromochloromethane	5	-
1,1,2-Trichloroethane	5	16
Benzene	5	-
Trans-1,3-Dichloropropene	5	-
Bromoform	5	-
4-Methyl-2-Pentanone	10	-
2-Hexanone	10	-
Tetrachloroethene	5	-
1,1,2,2-Tetrachloroethane	5	-
Toluene	5	-
Chlorobenzene	5	-
Ethylbenzene	5	-
Styrene	5	-
Xylenes (Total)	5	-
Acrolein	20	-
Acrylonitrile	26	-

Dilution Factor: 1.5

Associated Method Blank: C8890618819
 Associated Equipment Blank: 00S806138902*
 Associated Trip Blank: 00T806128902
 Associated Field Blank: 00D106138901
 00MH06138901

* = Held for analysis.

PROJECT: Plattsburgh

FT-1 Site - Semivolatile Aqueous Analysis (ug/L)

Summary Table

SAMPLE LOCATION:	MW-138	MW-308	MW-309	MW-310	MW-313	MW-336	MW-336 DUP
SAMPLE ID:	01MW13802202XX	01MW30803002XX	01MW30902002XX	01MW31002702XX	01MW31303502XX	01MW33603502XX	01MW336035020X
LAB NUMBER:	267483	267491	267492	267493	267490	267497	267494
DATE SAMPLED:	6/12/89	6/13/89	6/13/89	6/13/89	6/12/89	6/13/89	6/13/89
DATE EXTRACTED:	6/15/89	6/20/89	6/15/89	6/15/89	6/15/89	6/15/89	6/15/89
DATE ANALYZED:	6/16/89	6/21/89	6/16/89	6/17/89	6/16/89	6/16/89	6/17/89

ANALYTE	CROL						
Phenol	10	-	-	15	-	-	-
bis(2-chloroethyl)ether	10	-	-	-	-	-	-
2-Chlorophenol	10	-	-	-	-	-	-
1,3-Dichlorobenzene	10	-	-	-	-	-	-
1,4-Dichlorobenzene	10	-	-	-	-	-	-
Benzyl alcohol	10	-	-	-	-	-	-
1,2-Dichlorobenzene	10	-	-	18 J	-	-	-
2-Methylphenol	10	-	-	-	-	-	-
bis(2-chloroisopropyl)ether	10	-	-	120 J	-	-	-
4-Methylphenol	10	-	52 J	-	-	-	-
N-Nitroso-di-n-propylamine	10	-	-	-	-	-	-
Hexachloroethane	10	-	-	-	-	-	-
Nitrobenzene	10	-	-	-	-	-	-
Isophorone	10	-	-	-	-	-	-
2-Nitrophenol	10	-	-	-	-	-	-
2,4-Dimethylphenol	10	-	32	45	-	-	-
Benzoic acid	50	-	-	-	-	-	-
bis(2-chloroethoxy)methane	10	-	-	-	-	-	-
2,4-Dichlorophenol	10	-	-	-	-	-	-
1,2,4-Trichlorobenzene	10	-	72	53	-	-	-
Naphthalene	10	-	-	-	-	-	-
4-Chloroaniline	10	-	-	-	-	-	-
Hexachlorobutadiene	10	-	-	-	-	-	-
4-Chloro-3-Methylphenol	10	-	-	-	-	-	-
2-Methylnaphthalene	10	15	34	37	-	-	-
Hexachlorocyclopentadiene	10	-	-	-	-	-	-
2,4,6-Trichlorophenol	10	-	-	-	-	-	-
2,4,5-Trichlorophenol	50	-	-	-	-	-	-
2-Chloronaphthalene	10	-	-	-	-	-	-
2-Nitroaniline	50	-	-	-	-	-	-
Dimethylphthalate	10	-	-	-	-	-	-
Acenaphthylene	10	-	-	-	-	-	-
2,6-Dinitrotoluene	10	-	-	-	-	-	-

* = for analysis.

SAMPLE LOCATION:

SAMPLE LOCATION:	MW-138	MW-308	MW-309	MW-310	MW-313	MW-336	MW-336 DUP
SAMPLE ID:	01MW1380202XX	01MW30803002XX	01MW30902002XX	01MW31002020XX	01MW313030302XX	01MW336030302XX	01MW336030302DX
LAB NUMBER:	267483	267491	267492	267493	267490	267494	267494
DATE SAMPLED:	6/12/89	6/13/89	6/13/89	6/13/89	6/12/89	6/13/89	6/13/89
DATE EXTRACTED:	6/15/89	6/20/89	6/15/89	6/15/89	6/15/89	6/15/89	6/15/89
DATE ANALYZED:	6/16/89	6/21/89	6/16/89	6/17/89	6/16/89	6/16/89	6/17/89

ANALYTE	CRQL
3-Nitroaniline	50
Acenaphthene	10
2,4-Dinitrophenol	50
4-Nitrophenol	50
Dibenzofuran	10
2,4-Dinitrotoluene	10
Diethylphthalate	10
4-Chlorophenyl-phenylether	10
Fluorene	10
4-Nitroaniline	50
4,6-Dinitro-2-methylphenol	50
N-Nitrosodiphenylamine	10
4-Bromophenyl-phenylether	10
Hexachlorobenzene	10
Pentachlorophenol	50
Phenanthrene	10
Anthracene	10
Di-n-butylphthalate	10
Fluoranthene	10
Pyrene	10
Butylbenzylphthalate	10
3,3'-Dichlorobenzidine	20
Benzo(a)Anthracene	10
Chrysene	10
bis(2-Ethylhexyl)phthalate	10
Di-n-octylphthalate	10
Benzo(b)Fluoranthene	10
Benzo(k)Fluoranthene	10
Benzo(a)Pyrene	10
Indeno(1,2,3-cd)pyrene	10
Dibenzo(a,h)anthracene	10
Benzo(g,h,i)perylene	10

* = Held for analysis.

**PHASE II REMEDIAL INVESTIGATION
(FALL 1990 - WINTER 1991)**

Summary Table

[illegible]

SITE: FIRE TRAINING AREA

Summary Table

SAMPLE LOCATION: 02MW033XXX01X0 02MW033XXX01XX 02MW034XXX01XX 02MW035XXX01XX 02MW036XXX01XX
 LAB NUMBER: 42733 # 42732 # 42729 # 42730 # 42731 #
 DATE SAMPLED: 01/29/91 01/29/91 01/29/91 01/29/91 01/29/91
 DATE ANALYZED: 02/05/91 02/04/91 02/05/91 02/05/91 02/08/91

ANALYTE	CRQL	1.0	2.0	1.0	2.0	1.0	2.0	1.0	2.0
Chloromethane	10	-	-	-	-	-	-	-	-
Bromomethane	10	-	-	-	-	-	-	-	-
Vinyl Chloride	10	-	-	-	-	-	-	-	-
Chloroethane	10	-	-	-	-	-	-	-	-
Methylene Chloride	5	-	-	-	-	-	-	-	-
Acetone	10	-	-	-	-	-	-	-	-
Carbon Disulfide	5	-	-	-	-	-	-	-	-
1,1-Dichloroethene	5	-	-	-	-	-	-	-	-
1,1-Dichloroethane	5	-	-	-	-	-	-	-	-
1,2-Dichloroethene (total)	5	-	-	-	-	-	-	-	-
Chloroform	5	23	-	-	-	-	-	-	-
1,2-Dichloroethane	5	-	-	-	-	-	-	-	-
2-Butanone	10	-	-	R	-	-	-	-	-
1,1,1-Trichloroethane	5	-	-	-	-	-	-	-	-
Carbon Tetrachloride	5	-	-	-	-	-	-	-	-
Vinyl Acetate	10	-	-	-	-	-	-	-	-
Bromodichloromethane	5	-	-	-	-	-	-	-	-
1,2-Dichloropropane	5	-	-	-	-	-	-	-	-
cis-1,3-Dichloropropene	5	-	-	-	-	-	-	-	-
Trichloroethene	5	31	-	37	-	-	-	-	-
Dibromochloromethane	5	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane	5	-	-	-	-	-	-	-	-
Benzene	5	-	-	-	-	-	-	-	-
trans-1,3-Dichloropropene	5	-	-	-	-	-	-	-	-
Bromoform	5	-	-	-	-	-	-	-	-
4-Methyl-2-Pentanone	10	-	-	-	-	-	-	-	-
2-Hexanone	10	-	-	-	-	-	-	-	-
Tetrachloroethene	5	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	5	-	-	-	-	-	-	-	-
Toluene	5	23	-	26	-	-	-	-	15
Chlorobenzene	5	-	-	-	-	-	-	-	-
Ethylbenzene	5	14	-	16	-	-	-	-	-
Styrene	5	-	-	-	-	-	-	-	-
Total Xylenes	5	89	-	95	-	-	-	-	42

Dilution Factor:

Associated Method Blank: U6951

Associated Equipment Blank: 000SXX1XXX01XX

Associated Field Blank: 000TXX1XXX01XX

Associated Trip Blank: 000TXX1XXX01XX

Box Number: 6091-224
 #: Level D validation

Summary Table

SAMPLE LOCATION: 02MW033XXX01XD 02MW033XXX01XX 02MW034XXX01XX 02MW035XXX01XX 02MW036XXX01XX
LAB NUMBER: 42739 # 42738 # 42735 # 42736 # 42737 #
DATE SAMPLED: 01/29/91 01/29/91 01/29/91 01/29/91 01/29/91
DATE EXTRACTED: 01/31/91 01/31/91 01/31/91 01/31/91 01/31/91
DATE ANALYZED: 02/13/91 02/13/91 02/12/91 02/13/91 02/13/91

ANALYTE	CRQL				
3-Nitroaniline	50	-	-	-	-
Acenaphthene	10	-	-	-	-
2,4-Dinitrophenol	50	-	-	-	-
4-Nitrophenol	50	-	-	-	-
Dibenzofuran	10	-	-	-	-
2,4-Dinitrotoluene	10	-	-	-	-
Diethylphthalate	10	-	-	-	-
4-Chlorophenyl-phenylether	10	-	-	-	-
Fluorene	10	-	-	-	-
4-Nitroaniline	50	-	-	-	-
4,6-Dinitro-2-methylphenol	50	-	-	-	-
N-Nitrosodiphenylamine	10	-	-	-	-
4-Bromophenyl-phenylether	10	-	-	-	-
Hexachlorobenzene	10	-	-	-	-
Pentachlorophenol	50	-	-	-	-
Phenanthrene	10	-	-	-	-
Anthracene	10	-	-	-	-
Di-n-butylphthalate	10	-	-	-	-
Fluoranthene	10	-	-	-	-
Pyrene	10	-	-	-	-
Butylbenzylphthalate	10	-	-	-	-
3,3'-Dichlorobenzidine	20	-	-	-	-
Benzo(a)Anthracene	10	-	-	-	-
Chrysene	10	-	-	-	-
bis(2-Ethylhexyl)phthalate	10	-	-	-	-
Di-n-octylphthalate	10	-	-	-	-
Benzo(b)Fluoranthene	10	-	-	-	-
Benzo(k)Fluoranthene	10	-	-	-	-
Benzo(a)Pyrene	10	-	-	-	-
Indeno(1,2,3-c,d)Pyrene	10	-	-	-	-
Dibenz(a,h)Anthracene	10	-	-	-	-
Benzo(g,h,i)perylene	10	-	-	-	-
Dilution Factor: 1.0 1.0 1.0 1.0 1.0					

Associated Method Blank: 17173 17173 17173 17173 17173
Associated Equipment Blank: 000SXX1XXX01XX 000SXX1XXX01XX 000SXX1XXX01XX 000SXX1XXX01XX 000SXX1XXX01XX
Associated Field Blank: 17173 17173 17173 17173 17173

Box Number: 6091-224

#: Level D validation

X: Mass spectrum does not meet EPA CLP criteria for compound presence is strongly suspected.

Summary Table

SAMPLE LOCATION: 02HW033XXX01XD 02HW033XXX01XX 02HW034XXX01XX 02HW035XXX01XX 02HW036XXX01XX
 LAB NUMBER: 42739 # 42738 # 42735 # 42736 # 42737 #
 DATE SAMPLED: 01/29/91 01/29/91 01/29/91 01/29/91 01/29/91
 DATE EXTRACTED: 01/31/91 01/31/91 01/31/91 01/31/91 01/31/91
 DATE ANALYZED: 02/13/91 02/13/91 02/12/91 02/13/91 02/13/91

ANALYTE	CRQL				
Phenol	10	-	-	-	-
Bis(2-Chloroethyl)ether	10	-	-	-	-
2-Chlorophenol	10	-	-	-	-
1,3-Dichlorobenzene	10	-	-	-	-
1,4-Dichlorobenzene	10	-	-	-	-
Benzyl Alcohol	10	-	-	-	-
1,2-Dichlorobenzene	10	-	-	-	-
2-Methylphenol	10	-	-	-	-
Bis(2-Chloroisopropyl)ether	10	-	-	-	-
4-Methylphenol	10	-	-	-	-
N-Nitroso-di-n-propylamine	10	-	-	-	18 X
Hexachloroethane	10	-	-	-	-
Nitrobenzene	10	-	-	-	-
Isophorone	10	-	-	-	-
2-Nitrophenol	10	-	-	-	-
2,4-Dimethylphenol	10	-	-	-	-
Benzoic Acid	50	-	-	-	-
Bis(2-Chloroethoxy)methane	10	-	-	-	-
2,4-Dichlorophenol	10	-	-	-	-
1,2,4-Trichlorobenzene	10	-	-	-	-
Naphthalene	10	-	-	-	-
4-Chloroaniline	10	-	-	-	-
Hexachlorobutadiene	10	-	-	-	-
4-Chloro-3-Methylphenol	10	-	-	-	-
2-Methylnaphthalene	10	-	-	-	-
Hexachlorocyclopentadiene	10	-	-	-	-
2,4,6-Trichlorophenol	10	-	-	-	-
2,4,5-Trichlorophenol	50	-	-	-	-
2-Chloronaphthalene	10	-	-	-	-
2-Nitroaniline	50	-	-	-	-
Dimethylphthalate	10	-	-	-	-
Acenaphthylene	10	-	-	-	-
2,6-Dinitrotoluene	10	-	-	-	-

Box Number: 6091-224

: Level D validation

X: Mass spectrum does not meet EPA CLP criteria for compound presence is strongly suspected.

Summary Table

SAMPLE LOCATION: 02MW033XXX01XD 02MW033XXX01XX 02MW034XXX01XX 02MW035XXX01XX 02MW036XXX01XX
LAB NUMBER: 42751 # 42750 # 42747 # 42748 # 42749 #
DATE SAMPLED: 01/29/91 01/29/91 01/29/91 01/29/91 01/29/91

ANALYTE	CRQL				
Aluminum	200	-	-	-	-
Antimony	60	-	-	-	-
Arsenic	10	-	-	-	-
Barium	200	-	-	-	-
Beryllium	5	-	-	-	-
Cadmium	5	-	-	-	-
Calcium	5000	22700	23500	26600	84900
Chromium	10	-	-	-	-
Cobalt	50	-	-	-	-
Copper	25	-	-	-	-
Iron	100	-	107	-	2660
Lead	3	-	6.5	-	-
Magnesium	5000	7230	7050	8250	23500
Manganese	15	98.6	106	120	641
Mercury	0.2	-	-	-	-
Nickel	40	-	-	-	-
Potassium	5000	-	-	-	-
Selenium	5	-	-	-	-
Silver	10	-	-	-	-
Sodium	5000	6100	5100	-	-
Thallium	10	-	-	-	-
Vanadium	50	-	-	-	-
Zinc	20	-	-	-	-
Cyanide	10	-	-	-	-

Associated Method Blank:

Associated Equipment Blank:

Associated Field Blank:

PB4279

PB4279

PB4279

PB4279

PB4279

PB4279

PB4279

PB4279

Box Number: 6091-225

#: Level D validation

Summary Table

SAMPLE LOCATION: 02HW033XXX01XD 02HW033XXX01XX 02HW034XXX01XX 02HW035XXX01XX 02HW036XXX01XX
LAB NUMBER: 42745 # 42744 # 42741 # 42742 # 42743 #
DATE SAMPLED: 01/29/91 01/29/91 01/29/91 01/29/91 01/29/91

ANALYTE	CRQL				
Aluminum	200	1150	1150	-	-
Antimony	60	-	-	-	-
Arsenic	10	-	-	-	-
Barium	200	-	-	-	-
Beryllium	5	-	-	-	-
Cadmium	5	-	-	-	83100
Calcium	5000	25000	24800	24300	26500
Chromium	10	58.7 J	38.9 J	-	-
Cobalt	50	-	-	-	-
Copper	25	-	-	-	-
Iron	100	1660	1390	233	3100
Lead	3	25.6 J	19.2 J	R	-
Magnesium	5000	8070	7970	7310	8220
Manganese	15	144	147	112	121
Mercury	0.2	-	-	-	639
Nickel	40	-	-	-	-
Potassium	5000	-	-	-	-
Selenium	5	-	-	-	-
Silver	10	-	-	-	-
Sodium	5000	7280	7840	5390	-
Thallium	10	-	-	-	-
Vanadium	50	-	-	-	-
Zinc	20	9910 J	2820 J	-	-
Cyanide	10	-	-	-	-

Associated Method Blank: PB4279 PB4279 PB4279 PB4279 PB4279
Associated Equipment Blank: 00Q5XX1XXX01XX 00Q5XX1XXX01XX 00Q5XX1XXX01XX 00Q5XX1XXX01XX 00Q5XX1XXX01XX
Associated Field Blank: - - - - -

Box Number: 6091-225
#: Level D validation

**PHASE II REMEDIAL INVESTIGATION
(PCPT SURVEY)**

Summary Table

SAMPLE LOCATION: 02CW00205201XX 02CW00602401XX 02CW01004601XX 02CW01103501XX
 LAB NUMBER: 52516 53281 53371 53370
 DATE SAMPLED: 06/12/91 06/14/91 06/17/91 06/20/91
 DATE ANALYZED: 06/20/91 06/20/91 06/20/91 06/20/91

ANALYTE	SOW-02/88	DL				
Chloromethane	2	-	-	-	-	-
Bromomethane	2	-	-	-	-	-
Vinyl Chloride	2	-	-	6	-	-
Chloroethane	2	-	-	-	-	-
Methylene Chloride	1	-	-	-	-	-
Acetone	2	-	-	-	-	-
Carbon Disulfide	1	-	59	-	-	9
1,1-Dichloroethene	1	-	-	-	-	-
1,1-Dichloroethane	1	-	-	3	-	-
1,2-Dichloroethene (total)	1	-	99 EJ	27	-	-
Chloroform	1	-	-	-	-	-
1,2-Dichloroethane	1	-	-	7	-	-
2-Butanone	2	-	-	-	-	-
1,1,1-Trichloroethane	1	-	-	-	-	-
Carbon Tetrachloride	1	-	-	-	-	-
Vinyl Acetate	2	-	-	-	-	-
Bromodichloromethane	1	-	-	-	-	-
1,2-Dichloropropane	1	-	-	-	-	-
cis-1,3-Dichloropropene	1	-	-	-	-	-
Trichloroethene	1	12	2100 D	-	-	-
Dibromochloromethane	1	-	-	-	-	-
1,1,2-Trichloroethane	1	-	-	-	-	-
Benzene	1	-	3	-	-	-
trans-1,3-Dichloropropene	1	-	-	-	-	-
Bromoform	1	-	-	-	-	-
4-Methyl-2-Pentanone	2	-	-	-	-	-
2-Hexanone	2	-	-	-	-	-
Tetrachloroethene	1	-	5	-	-	-
1,1,2,2-Tetrachloroethane	1	-	-	-	-	-
Toluene	1	-	-	-	-	-
Chlorobenzene	1	-	-	-	-	-
Ethylbenzene	1	-	-	-	-	-
Styrene	1	-	-	-	-	-
Total Xylenes	1	-	-	-	-	-
Dilution Factor:			1.00	1.00	1.00	1.00

Associated Method Blank: S2743 S2743 S2743 S2743
 Associated Equipment Blank: 02QECPTXXX01XX 02QECPTXXX02XX 02QECPTXXX03XX 02QECPTXXX03XX
 Associated Field Blank: 02QECPTXXX01XX 02QECPTXXX02XX 02QECPTXXX03XX 02QECPTXXX03XX
 Associated Trip Blank: 02QECPTXXX01XX 02QECPTXXX02XX 02QECPTXXX03XX 02QECPTXXX03XX

Box Number: 6091-106
 02QECPTXXX01XX and 02QECPTXXX01XX

Summary table

SAMPLE LOCATION: 02CW01202501XX 02CW01302801XX 02CW01401001XX 02CW01501201XX 02CW01501201XX
LAB NUMBER: 53621 # 53620 # 53619 # 53618 # 53617 #
DATE SAMPLED: 06/18/91 06/18/91 06/18/91 06/18/91 06/18/91
DATE ANALYZED: 06/28/91 06/27/91 06/27/91 06/27/91 06/27/91

ANALYTE	SOV-02/88	DL	1.0	1.0	1.0	1.0	1.0
Chloromethane	2	-	-	-	-	-	-
Bromomethane	2	-	-	-	-	-	-
Vinyl Chloride	2	-	-	-	-	-	-
Chloroethane	2	-	-	-	-	-	-
Methylene Chloride	1	-	-	-	-	-	-
Acetone	2	-	-	-	-	-	-
Carbon Disulfide	1	110 EJ	-	-	-	-	-
1,1-Dichloroethene	1	-	-	-	-	-	-
1,1-Dichloroethane	1	-	-	-	-	-	-
1,2-Dichloroethene (total)	1	-	-	-	-	-	-
Chloroform	1	500 DJ	-	-	-	-	-
1,2-Dichloroethane	1	-	-	-	-	-	-
2-Butanone	2	-	R	R	R	R	R
1,1,1-Trichloroethane	1	-	-	-	-	-	-
Carbon Tetrachloride	1	-	-	-	-	-	-
Vinyl Acetate	2	-	R	R	R	R	R
Bromodichloromethane	1	-	-	-	-	-	-
1,2-Dichloropropane	1	-	-	-	-	-	-
cis-1,3-Dichloropropene	1	-	-	-	-	-	-
Trichloroethene	1	-	-	-	-	-	-
Dibromochloromethane	1	130 DJ	-	-	-	-	-
1,1,2-Trichloroethane	1	-	-	-	-	-	-
Benzene	1	-	-	-	-	-	-
trans-1,3-Dichloropropene	1	9	-	-	-	-	-
Bromoform	1	-	-	-	-	-	-
4-Methyl-2-Pentanone	2	-	-	-	-	-	-
2-Hexanone	2	-	-	-	-	-	-
Tetrachloroethene	1	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	1	-	-	-	-	-	-
Toluene	1	-	-	-	-	-	-
Chlorobenzene	1	-	-	-	-	-	-
Ethylbenzene	1	-	-	-	-	-	-
Styrene	1	-	-	-	-	-	-
Total Xylenes	1	-	-	-	-	-	-

Associated Method Blank: S2863 S2849 S2849 S2849 S2849
Associated Equipment Blank: 02QECPTXXX04XX 02QECPTXXX04XX 02QECPTXXX04XX 02QECPTXXX04XX 02QECPTXXX04XX
Associated Field Blank: 02 02 02 02 02
Associated Trip Blank: 00QTCPTXXX04XX 00QTCPTXXX04XX 00QTCPTXXX04XX 00QTCPTXXX04XX 00QTCPTXXX04XX

Box Number: 6091-110
#: Region II Full Validation
02: 02QDCPTXXX01XX and 02QSCPTXXX01XX

Summary Table

SAMPLE LOCATION: 02CW02004601XX 02CW02007001XX
 LAB NUMBER: 53814 # 53811 #
 DATE SAMPLED: 06/19/91 06/19/91
 DATE ANALYZED: 06/28/91 06/28/91

ANALYTE	SOI-02/88	DL
Chloromethane	2	-
Bromomethane	2	-
Vinyl Chloride	2	-
Chloroethane	2	-
Methylene Chloride	1	-
Acetone	2	-
Carbon Disulfide	1	280
1,1-Dichloroethene	1	140 J
1,1-Dichloroethane	1	-
1,2-Dichloroethene (total)	1	18000 DJ
1,2-Dichloroethane	1	57
Chloroform	1	-
1,2-Dichloroethane	1	45 J
2-Butanone	2	R
1,1,1-Trichloroethane	1	-
Carbon Tetrachloride	1	-
Vinyl Acetate	2	R
Bromodichloromethane	1	-
1,2-Dichloropropane	1	-
cis-1,3-Dichloropropene	1	-
Trichloroethene	1	4 J
Dibromochloromethane	1	-
1,1,2-Trichloroethane	1	19 J
Benzene	1	100 EJ
trans-1,3-Dichloropropene	1	-
Bromoform	1	-
4-Methyl-2-Pentanone	2	70 EJ
2-Hexanone	2	96 EJ
Tetrachloroethene	1	-
1,1,2,2-Tetrachloroethane	1	1100 DJ
Toluene	1	-
Chlorobenzene	1	-
Ethylbenzene	1	260 EJ
Styrene	1	-
Total Xylenes	1	580 EJ
		10
		1.0
		10

Dilution Factor:

Associated Method Blank: S2863 S2863
 Associated Equipment Blank: 02QECPTXXX05XX 02QECPTXXX05XX
 Associated Field Blank: 00QTCPTXXX05XX 00QTCPTXXX05XX
 Associated Trip Blank: 00QTCPTXXX05XX 00QTCPTXXX05XX

Box Number: 6091-108
 #: Region II Full Validation
 QA: 02QDCPTXXX01XX and 02QSCPTXXX01XX

Summary Table

SAMPLE LOCATION: 02CW03502901XX
LAB NUMBER: 54966 R
DATE SAMPLED: 06/29/91
DATE ANALYZED: 07/16/91

ANALYTE	SQM-02/88	DL
Chloromethane	2	R
Bromomethane	2	R
Vinyl Chloride	2	R
Chloroethane	2	R
Methylene Chloride	1	R
Acetone	2	R
Carbon Disulfide	1	17 J
1,1-Dichloroethene	1	R
1,1-Dichloroethane	1	R
1,2-Dichloroethene (total)	1	R
Chloroform	1	R
1,2-Dichloroethane	1	R
2-Butanone	2	R
1,1,1-Trichloroethane	1	R
Carbon Tetrachloride	1	R
Vinyl Acetate	2	R
Bromodichloromethane	1	R
1,2-Dichloropropene	1	R
cis-1,3-Dichloropropene	1	R
Trichloroethene	1	R
Dibromochloromethane	1	R
1,1,2-Trichloroethane	1	R
Benzene	1	3 J
trans-1,3-Dichloropropene	1	R
Bromoform	1	R
4-Methyl-2-Pentanone	2	R
2-Hexanone	2	R
Tetrachloroethene	1	R
1,1,2,2-Tetrachloroethane	1	R
Toluene	1	R
Chlorobenzene	1	3 J
Ethylbenzene	1	R
Styrene	1	R
Total Xylenes	1	R

Dilution Factor: 1.0

Associated Method Blank: U8583
Associated Equipment Blank: 02QECPT00701XX
Associated Field Blank: a
Associated Trip Blank: 00QTCPT00601XX

Box Number: 6091-109
a: 00QDCPT00201XX and 00QSCPT00201XX

**PHASE II REMEDIAL INVESTIGATION
(FALL 1991)**

Summary Table

LOCATION:		MW-02-001	MW-02-007	MW-02-011	MW-02-016	MW-02-017	MW-02-019	MW-02-020	MW-02-021
ISIS ID:		02MW00100006XX	02MW00700006XX	02MW01100006XX	02MW01600006XX	02MW01700006XX	02MW01900006XX	02MW02000006XX	02MW02100006XX
LAB NUMBER:		62412 #	62473 #	62474 #	62411 #	62408 #	62415 #	62416 #	62058 #
DATE SAMPLED:		09/20/91	09/21/91	09/21/91	09/20/91	09/20/91	09/20/91	09/20/91	09/18/91
DATE ANALYZED:		09/26/91	10/02/91	10/02/91	09/26/91	09/26/91	09/26/91	09/25/91	09/24/91
ANALYTE	SOW-02/88	DL	1.00	100	1.00	50.0	50.0	250	1.00
Chloromethane	2	-	-	-	-	-	-	-	-
Bromomethane	2	-	-	-	-	-	-	-	-
Vinyl Chloride	2	-	-	-	-	-	-	-	-
Chloroethane	2	-	-	-	-	-	-	-	-
Methylene Chloride	1	-	-	-	-	-	-	-	-
Acetone	2	-	-	-	-	-	-	-	-
Carbon Disulfide	1	-	-	-	-	-	-	-	-
1,1-Dichloroethene	1	-	-	-	-	-	-	-	-
1,1-Dichloroethane	1	-	-	-	-	-	-	-	-
1,2-Dichloroethene (total)	1	-	-	-	-	-	-	-	-
Chloroform	1	-	-	-	-	-	-	-	-
1,2-Dichloroethane	1	-	-	-	-	-	-	-	-
2-Butanone	2	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	1	-	-	-	-	-	-	-	-
Carbon Tetrachloride	1	-	-	-	-	-	-	-	-
Vinyl Acetate	2	-	-	-	-	-	-	-	-
Bromodichloromethane	1	-	-	-	-	-	-	-	-
1,2-Dichloropropane	1	-	-	-	-	-	-	-	-
cis-1,3-Dichloropropene	1	-	-	-	-	-	-	-	-
Trichloroethene	1	-	-	-	-	-	-	-	-
Dibromochloromethane	1	-	-	-	-	-	-	-	-
1,1,2-Trichloroethane	1	-	-	-	-	-	-	-	-
Benzene	1	-	-	-	-	-	-	-	-
trans-1,3-Dichloropropene	1	-	-	-	-	-	-	-	-
Bromoform	1	-	-	-	-	-	-	-	-
4-Methyl-2-Pentanone	2	-	-	-	-	-	-	-	-
Tetrachloroethene	1	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	1	-	-	-	-	-	-	-	-
Toluene	1	-	-	-	-	-	-	-	-
Chlorobenzene	1	-	-	-	-	-	-	-	-
Ethylbenzene	1	-	-	-	-	-	-	-	-
Styrene	1	-	-	-	-	-	-	-	-
Total Xylenes	1	-	-	-	-	-	-	-	-
Dilution Factor:		1.00	1.00	100	1.00	50.0	50.0	250	1.00
Associated Method Blank:		s3976	Y1348	Y1348	s3976	s3976	s3976	s3955	s3920
Associated Equipment Blank:		00QS00500006XX	00QS00500006XX	00QS00500006XX	00QS00500006XX	00QS00500006XX	00QS00500006XX	00QS00500006XX	00QS00300006XX
Associated Field Blank:		00QD00200006XX	00QD00200006XX	00QD00200006XX	00QD00200006XX	00QD00200006XX	00QD00200006XX	00QD00200006XX	00QD00200006XX
Associated Trip Blank:		00QT00800006XX	00QT00900006XX	00QT00900006XX	00QT00800006XX	00QT00800006XX	00QT00800006XX	00QT00800006XX	00QT00600006XX

Site: Fire Training Area
#: Level D Validation

Summary table

LOCATION: MW-02-038		MW-02-039	MW-02-040	MW-02-041	MW-02-042	MW-02-043	MW-02-044
ISIS ID: 02MW03800006XX		02MW03900006XX	02MW04000006XX	02MW04100006XX	02MW04200006XX	02MW04300006XX	02MW04400006XX
LAB NUMBER: 61125 #		61947 #	61593 #	61949 #	61592 #	61950 #	61126 #
DATE SAMPLED: 09/10/91		09/17/91	09/12/91	09/17/91	09/12/91	09/17/91	09/10/91
DATE ANALYZED: 09/17/91		09/23/91	09/18/91	09/24/91	09/18/91	09/24/91	09/17/91
ANALYTE	SOM-02/88	DL					
Chloromethane	2	-	-	-	-	-	-
Bromomethane	2	-	-	-	-	-	-
Vinyl Chloride	2	-	-	-	-	-	-
Chloroethane	2	-	-	-	-	-	-
Methylene Chloride	1	-	-	-	-	-	-
Acetone	2	-	-	-	-	-	-
Carbon Disulfide	1	-	-	-	-	-	-
1,1-Dichloroethene	1	-	-	-	-	-	-
1,1-Dichloroethane	1	-	-	-	-	-	-
1,2-Dichloroethene (total)	1	45	-	-	960	-	2
1,2-Dichloroethane	1	-	180	6600	6900	-	-
Chloroform	1	-	-	-	-	-	-
1,2-Dichloroethane	1	-	-	-	-	-	-
2-Butanone	2	-	-	-	-	-	-
1,1,1-Trichloroethane	1	-	-	-	-	-	-
Carbon Tetrachloride	1	-	-	-	-	-	-
Vinyl Acetate	2	-	-	-	-	-	-
Bromodichloromethane	1	-	-	-	-	-	-
1,2-Dichloropropane	1	-	-	-	-	-	-
cis-1,3-Dichloropropene	1	-	-	-	-	-	-
Trichloroethene	1	59	-	-	60	100	56
Dibromochloromethane	1	-	-	-	-	-	-
1,1,2-Trichloroethane	1	-	-	-	-	-	-
Benzene	1	-	-	-	-	-	-
trans-1,3-Dichloropropene	1	-	-	-	-	-	-
Bromoform	1	-	-	-	-	-	-
4-Methyl-2-Pentanone	2	-	-	-	-	-	-
2-Hexanone	2	-	-	-	-	-	-
Tetrachloroethene	1	-	-	-	-	-	-
1,1,2,2-Tetrachloroethane	1	-	-	-	-	-	-
Toluene	1	-	-	-	-	-	-
Chlorobenzene	1	-	-	-	-	-	-
Ethylbenzene	1	-	-	-	-	-	-
Styrene	1	-	-	-	-	-	-
Total Xylenes	1	-	-	-	-	-	-
Dilution Factor:		5.00	250	250	250	5.00	1.00
Associated Method Blank:		S3793	S3905	S3905	S3905	S3905	S3793
Associated Equipment Blank:		-	-	-	-	-	-
Associated Field Blank:		00QD00100006XX	00QD00200006XX	00QD00200006XX	00QD00200006XX	00QD00200006XX	00QD00100006XX
Associated Trip Blank:		00QT00100006XX	00QT00500006XX	00QT00500006XX	00QT00500006XX	00QT00500006XX	00QT00100006XX
Site: Fire Training Area							
#: Level D Validation							

Low Level Volatiles Aqueous Analysis (ug/L)

Summary Table

LOCATION: MW-02-045 02MW045000060X MW-02-045 02MW046000060X MW-02-047 02MW047000060X MW-02-048 02MW048000060X MW-02-049 02MW049000060X MW-02-048 02MW048000060X MW-04-010 04MW001000060X									
LAB NUMBER: 61443 # 61442 # 62055 # 62407 # 62406 # 61127 # 61951 #									
DATE SAMPLED: 09/11/91 09/11/91 09/18/91 09/20/91 09/20/91 09/17/91 09/17/91									
DATE ANALYZED: 09/17/91 09/18/91 09/24/91 09/26/91 09/26/91 09/17/91 09/24/91									
ANALYTE	DL	SOW-02/88							
Chloromethane	2	-	-	-	-	-	-	-	
Bromomethane	2	-	-	-	-	-	-	-	
Vinyl Chloride	2	-	-	-	-	-	-	-	
Chloroethane	2	-	-	-	-	-	-	-	
Methylene Chloride	1	-	-	1	-	-	-	-	
Acetone	2	-	-	-	-	-	-	-	
Carbon Disulfide	1	-	-	-	-	-	-	-	
1,1-Dichloroethene	1	-	-	-	-	-	-	-	
1,1-Dichloroethane	1	-	-	-	-	-	-	-	
1,2-Dichloroethene (total)	1	200	-	-	-	-	96	-	
Chloroform	1	250	-	-	-	83	-	-	
1,2-Dichloroethane	1	-	-	-	-	-	-	-	
2-Butanone	2	-	R	R	-	-	R	R	
1,1,1-Trichloroethane	1	-	-	-	-	-	-	-	
Carbon Tetrachloride	1	-	-	-	-	-	-	-	
Vinyl Acetate	2	-	-	R	-	-	-	-	
Bromodichloromethane	1	-	-	-	-	-	-	-	
1,2-Dichloropropane	1	-	-	-	-	-	-	-	
cis-1,3-Dichloropropene	1	-	-	-	-	-	-	-	
Trichloroethene	1	-	-	-	-	280	-	-	
Dibromochloromethane	1	-	-	-	-	-	-	-	
1,1,2-Trichloroethane	1	-	-	-	-	-	-	-	
Benzene	1	-	-	-	-	-	-	-	
trans-1,3-Dichloropropene	1	-	-	-	-	-	-	-	
Bromoform	1	-	-	-	-	-	-	-	
4-Methyl-2-Pentanone	2	-	-	-	-	-	-	-	
2-Hexanone	2	-	R	R	-	-	R	R	
Tetrachloroethene	1	-	-	-	-	-	-	-	
1,1,2,2-Tetrachloroethane	1	-	-	-	-	-	-	-	
Toluene	1	-	-	-	-	-	-	-	
Chlorobenzene	1	-	-	-	-	-	-	-	
Ethylbenzene	1	-	-	-	-	-	-	-	
Styrene	1	-	-	-	-	-	-	-	
Total Xylenes	1	-	-	-	-	-	-	-	
Dilution Factor:		10.0	10.0	1.00	1.00	10.0	20.0	1.00	
		=====							1.00
Associated Method Blank:		S3793	S3808	S3808	S3976	S3976	S3976	S3793	
Associated Equipment Blank:		00qS001000006XX	00qS001000006XX	00qS001000006XX	00qS003000006XX	00qS005000006XX	00qS005000006XX	-	
Associated Field Blank:		00qD001000006XX	00qD001000006XX	00qD001000006XX	00qD002000006XX	00qD002000006XX	00qD002000006XX	00qD002000006XX	
Associated Trip Blank:		00qT002000006XX	00qT002000006XX	00qT002000006XX	00qT006000006XX	00qT008000006XX	00qT008000006XX	00qT005000006XX	
Site: Fire Training Area									
#: Level D Validation									

Summary Table

LOCATION:	MW-04-004	MW-04-005	MW-04-006	MW-13-002	MW-16-001
ISIS ID:	04MW00400006XX	04MW00500006XX	04MW00600006XX	13MW00200006XX	16MW00100006XX
LAB NUMBER:	61952 #	61590 #	61953 #	62057 #	61589 #
DATE SAMPLED:	09/17/91	09/12/91	09/17/91	09/18/91	09/12/91
DATE ANALYZED:	09/24/91	09/18/91	09/24/91	09/24/91	09/18/91
SOW-02/88					
ANALYTE	DL				
Chloromethane	2	-	-	-	-
Bromomethane	2	-	-	-	-
Vinyl Chloride	2	-	-	-	-
Chloroethane	2	-	-	-	-
Methylene Chloride	1	-	-	1	-
Acetone	2	-	-	-	-
Carbon Disulfide	1	-	-	-	-
1,1-Dichloroethene	1	-	-	-	-
1,1-Dichloroethane	1	-	-	-	-
1,2-Dichloroethene (total)	1	-	-	-	-
Chloroform	1	-	-	-	-
1,2-Dichloroethane	1	-	-	-	-
2-Butanone	2	R	R	R	R
1,1,1-Trichloroethane	1	-	-	-	-
Carbon Tetrachloride	1	-	-	-	-
Vinyl Acetate	2	-	-	R	-
Bromodichloromethane	1	-	-	-	-
1,2-Dichloropropane	1	-	-	-	-
cis-1,3-Dichloropropene	1	-	-	-	-
Trichloroethene	1	62	-	-	-
Dibromochloromethane	1	-	-	-	-
1,1,2-Trichloroethane	1	-	-	-	-
Benzene	1	-	-	-	-
trans-1,3-Dichloropropene	1	-	-	-	-
Bromoform	1	-	-	-	-
4-Methyl-2-Pentanone	2	-	-	-	-
2-Hexanone	2	R	R	R	R
Tetrachloroethene	1	-	-	-	-
1,1,2,2-Tetrachloroethane	1	-	-	-	-
Toluene	1	-	-	-	-
Chlorobenzene	1	-	-	-	-
Ethylbenzene	1	-	-	-	-
Styrene	1	-	-	-	-
Total Xylenes	1	-	-	-	-
Dilution Factor:		1.00	5.00	1.00	1.00
					5.00

Associated Method Blank:	S3905	S3808	S3905	S3920	S3808
Associated Equipment Blank:	00Q000200006XX	00Q000200006XX	-	00Q000300006XX	00Q000200006XX
Associated Field Blank:	00Q000200006XX	00Q000100006XX	00Q000200006XX	00Q000200006XX	00Q000100006XX
Associated Trip Blank:	00Q000500006XX	00Q000300006XX	00Q000500006XX	00Q000600006XX	00Q000300006XX

Site: Fire Training Area
#: Level D Validation

PROJECT: Plattsburgh A.F.B. - Fall of 1991

Semivolatiles Organic Aqueous Analysis (ug/L)

Summary Table

ANALYTE	SOW-02/88	CRQL	LOCATION:	MW-02-001	MW-02-007	MW-02-011	MW-02-016	MW-02-017	MW-02-019	MW-02-020	MW-02-021
			ISIS ID:	02MW001000006XX	02MW007000006XX	02MW011000006XX	02MW016000006XX	02MW017000006XX	02MW019000006XX	02MW020000006XX	02MW021000006XX
			LAB NUMBER:	62423 #	62482 #	62483 #	62422 #	62419 #	62426 #	62427 #	62070 #
			DATE SAMPLED:	09/20/91	09/21/91	09/21/91	09/20/91	09/20/91	09/20/91	09/20/91	09/18/91
			DATE EXTRACTED:	09/25/91	09/28/91	09/28/91	09/25/91	09/25/91	09/25/91	09/25/91	09/23/91
			DATE ANALYZED:	10/25/91	11/01/91	10/31/91	10/25/91	10/24/91	10/31/91	10/28/91	10/25/91
Phenol	10	-									
bis(2-Chloroethyl)ether	10	-									
2-Chlorophenol	10	-									
1,3-Dichlorobenzene	10	-									
1,4-Dichlorobenzene	10	-									
Benzyl Alcohol	10	-									
1,2-Dichlorobenzene	10	-									
2-Methylphenol	10	-									
bis(2-Chloroisopropyl)ether	10	-									
4-Methylphenol	10	-									
N-Nitroso-di-n-propylamine	10	-									
Hexachloroethane	10	-									
Nitrobenzene	10	-									
Isophorone	10	-									
2-Nitrophenol	10	-									
2,4-Dimethylphenol	10	-									
Benzoic Acid	50	-									
bis(2-Chloroethoxy)methane	10	-									
2,4-Dichlorophenol	10	-									
1,2,4-Trichlorobenzene	10	-									
Naphthalene	10	-									
4-Chloroaniline	10	-									
Hexachlorobutadiene	10	-									
4-Chloro-3-Methylphenol	10	-									
2-Methylnaphthalene	10	-									
Hexachlorocyclopentadiene	10	-									
2,4,6-Trichlorophenol	50	-									
2,4,5-Trichlorophenol	10	-									
2-Chloronaphthalene	50	-									
2-Nitroaniline	10	-									
Dimethylphthalate	10	-									
Acenaphthylene	10	-									
2,6-Dinitrotoluene	10	-									

Site: Fire Training Area
#: Level D Validation

Summary Table

LOCATION:	MW-02-001	MW-02-007	MW-02-011	MW-02-016	MW-02-017	MW-02-019	MW-02-020	MW-02-021
ISIS ID:	02MW00100006XX	02MW00700006XX	02MW01100006XX	02MW01600006XX	02MW01700006XX	02MW01900006XX	02MW02000006XX	02MW02100006XX
LAB NUMBER:	62423 #	62482 #	62483 #	62422 #	62419 #	62426 #	62427 #	62070 #
DATE SAMPLED:	09/20/91	09/21/91	09/21/91	09/20/91	09/20/91	09/20/91	09/20/91	09/18/91
DATE EXTRACTED:	09/25/91	09/28/91	09/28/91	09/25/91	09/25/91	09/25/91	09/25/91	09/23/91
DATE ANALYZED:	10/25/91	11/01/91	10/31/91	10/25/91	10/24/91	10/31/91	10/28/91	10/25/91

ANALYTE	SOW-02/88	CRQL	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
3-Nitroaniline		50	-	-	-	-	-	-	-	-
Acenaphthene		10	-	-	-	-	-	-	-	-
2,4-Dinitrophenol		50	-	-	-	-	-	-	-	-
4-Nitrophenol		50	-	-	-	-	-	-	-	-
Dibenzofuran		10	-	-	-	-	-	-	-	-
2,4-Dinitrotoluene		10	-	-	-	-	-	-	-	-
Diethylphthalate		10	-	-	-	-	-	-	-	-
4-Chlorophenyl-phenylether		10	-	-	-	-	-	-	-	-
Fluorene		10	-	-	-	-	-	-	-	-
4-Nitroaniline		50	-	-	-	-	-	-	-	-
4,6-Dinitro-2-methylphenol		50	-	-	-	-	-	-	-	-
N-Nitrosodiphenylamine		10	-	-	-	-	-	-	-	-
4-Bromophenyl-phenylether		10	-	-	-	-	-	-	-	-
Hexachlorobenzene		10	-	-	-	-	-	-	-	-
Pentachlorophenol		50	-	-	-	-	-	-	-	-
Phenanthrene		10	-	-	-	-	-	-	-	-
Anthracene		10	-	-	-	-	-	-	-	-
Di-n-butylphthalate		10	-	-	-	-	-	-	-	-
Fluoranthene		10	-	-	-	-	-	-	-	-
Pyrene		10	-	-	-	-	-	-	-	-
Butylbenzylphthalate		10	-	-	-	-	-	-	-	-
3,3'-Dichlorobenzidine		20	-	-	-	-	-	-	-	-
Benzo(a)Anthracene		10	-	-	-	-	-	-	-	-
Chrysene		10	-	-	-	-	-	-	-	-
bis(2-Ethylhexyl)phthalate		10	-	-	-	-	-	-	-	-
Di-n-octylphthalate		10	-	-	-	-	-	-	-	-
Benzo(b)Fluoranthene		10	-	-	-	-	-	-	-	-
Benzo(k)Fluoranthene		10	-	-	-	-	-	-	-	-
Benzo(a)Pyrene		10	-	-	-	-	-	-	-	-
Indeno(1,2,3-c,d)Pyrene		10	-	-	-	-	-	-	-	-
Dibenz(a,h)Anthracene		10	-	-	-	-	-	-	-	-
Benzo(g,h,i)perylene		10	-	-	-	-	-	-	-	-

Dilution Factor: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Associated Method Blank:	P1175	P1265	P1175	P1175	P1175	P1175	P1175	P1254
Associated Equipment Blank:	00QS00500006XX	-	00QS00500006XX	00QS00500006XX	00QS00500006XX	00QS00500006XX	00QS00500006XX	00QS00300006XX
Associated Field Blank:	00QD00200006XX	00QD00200006XX	00QD00200006XX	00QD00200006XX	00QD00200006XX	00QD00200006XX	00QD00200006XX	00QD00200006XX

Site: Fire Training Area
#: Level D Validation

Semivolatile Organic Aqueous Analysis (ug/L)

LOCATION:	MW-02-021	MW-02-022	MW-02-022	MW-02-023	MW-02-026	MW-02-027	MW-02-030	MW-02-031
ISIS ID:	02MW02100006XX	02MW022000060X	02MW02200006XX	02MW02300006XX	02MW02600006XX	02MW02700006XX	02MW03000006XX	02MW03100006XX
LAB NUMBER:	62070 R #	62072 R #	62071 #	62068 #	62421 #	62420 #	62425 #	62484 #
DATE SAMPLED:	09/18/91	09/18/91	09/18/91	09/18/91	09/20/91	09/20/91	09/21/91	09/21/91
DATE EXTRACTED:	09/23/91	09/23/91	09/23/91	09/23/91	09/25/91	09/25/91	09/25/91	09/28/91
DATE ANALYZED:	10/28/91	10/25/91	10/24/91	10/24/91	10/25/91	10/25/91	10/28/91	10/31/91

Site: Fire Training Area
#: Level D Validation

Summary Table

LOCATION: MW-02-021 MW-02-022 MW-02-023 MW-02-026 MW-02-027 MW-02-030 MW-02-031
 ISIS ID: 02MW02100006XX 02MW02200006XX 02MW02300006XX 02MW02600006XX 02MW02700006XX 02MW03000006XX 02MW03100006XX
 LAB NUMBER: 62070 R # 62071 # 62068 # 62421 # 62420 # 62425 # 62484 #
 DATE SAMPLED: 09/18/91 09/18/91 09/18/91 09/20/91 09/20/91 09/20/91 09/21/91
 DATE EXTRACTED: 09/23/91 09/23/91 09/23/91 09/25/91 09/25/91 09/25/91 09/28/91
 DATE ANALYZED: 10/28/91 10/25/91 10/24/91 10/25/91 10/25/91 10/28/91 10/31/91

ANALYTE	SOM-02/88	CRQL	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
3-Nitroaniline	50	-	-	-	-	-	-	-	-	-	-
Acenaphthene	10	-	-	-	-	-	-	-	-	-	-
2,4-Dinitrophenol	50	-	-	-	-	-	-	-	-	-	-
4-Nitrophenol	50	-	-	-	-	-	-	-	-	-	-
Dibenzofuran	10	-	-	-	-	-	-	-	-	-	-
2,4-Dinitrotoluene	10	-	-	-	-	-	-	-	-	-	-
Diethylphthalate	10	-	-	-	-	-	-	-	-	-	-
4-Chlorophenyl-phenylether	10	-	-	-	-	-	-	-	-	-	-
Fluorene	10	-	-	-	-	-	-	-	-	-	-
4-Nitroaniline	50	-	-	-	-	-	-	-	-	-	-
4,6-Dinitro-2-methylphenol	50	-	-	-	-	-	-	-	-	-	-
N-Nitrosodiphenylamine	10	-	-	-	-	-	-	-	-	-	-
4-Bromophenyl-phenylether	10	-	-	-	-	-	-	-	-	-	-
Hexachlorobenzene	10	-	-	-	-	-	-	-	-	-	-
Pentachlorophenol	50	-	-	-	-	-	-	-	-	-	-
Phenanthrene	10	-	-	-	-	-	-	-	-	-	-
Anthracene	10	-	-	-	-	-	-	-	-	-	-
Di-n-butylphthalate	10	-	-	-	-	-	-	-	-	-	-
Fluoranthene	10	-	-	-	-	-	-	-	-	-	-
Pyrene	10	-	-	-	-	-	-	-	-	-	-
Butylbenzylphthalate	10	-	-	-	-	-	-	-	-	-	-
3,3'-Dichlorobenzidine	20	-	-	-	-	-	-	-	-	-	-
Benzo(a)Anthracene	10	-	-	-	-	-	-	-	-	-	-
Chrysene	10	-	-	-	-	-	-	-	-	-	-
bis(2-Ethylhexyl)phthalate	10	-	-	-	-	-	-	-	-	-	-
Di-n-octylphthalate	10	-	-	-	-	-	-	-	-	-	-
Benzo(b)Fluoranthene	10	-	-	-	-	-	-	-	-	-	-
Benzo(k)Fluoranthene	10	-	-	-	-	-	-	-	-	-	-
Benzo(a)Pyrene	10	-	-	-	-	-	-	-	-	-	-
Indeno(1,2,3-c,d)Pyrene	10	-	-	-	-	-	-	-	-	-	-
Dibenz(a,h)Anthracene	10	-	-	-	-	-	-	-	-	-	-
Benzo(g,h,i)perylene	10	-	-	-	-	-	-	-	-	-	-
Dilution Factor: 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00											

Associated Method Blank: P1254 P1254 P1254 P1175 P1175 P1175 P1265
 Associated Equipment Blank: 00QS00300006XX 00QS00300006XX 00QS00300006XX 00QS00500006XX 00QS00500006XX 00QS00500006XX -
 Associated Field Blank: 00QD00200006XX 00QD00200006XX 00QD00200006XX 00QD00200006XX 00QD00200006XX 00QD00200006XX 00QD00200006XX

Site: Fire Training Area
 #: Level D Validation

PROJECT: Plattsburgh A.F.B. - Fall of 1991

Semivolatile Organic Aqueous Analysis (ug/L)

Summary Table

ANALYTE	SOW-02/88	CRQL	LOCATION:	MW-02-037	MW-02-038	MW-02-040	MW-02-041	MW-02-041	MW-02-042	MW-02-043	MW-02-044
			ISTS ID:	02MW03700006XX	02MW03800006XX	02MW04000006XX	02MW04100006DX	02MW04100006XX	02MW04200006XX	02MW04300006XX	02MW04400006XX
			LAB NUMBER:	61128 #	61129 #	61598 #	61956 #	61955 #	61597 #	61957 #	61130 #
			DATE SAMPLED:	09/10/91	09/10/91	09/12/91	09/17/91	09/17/91	09/12/91	09/17/91	09/10/91
			DATE EXTRACTED:	09/15/91	09/15/91	09/16/91	09/23/91	09/23/91	09/16/91	09/23/91	09/15/91
			DATE ANALYZED:	10/06/91	10/01/91	10/21/91	10/21/91	10/21/91	10/24/91	10/21/91	10/04/91
Phenol	10			-	-	-	-	110 J	-	-	-
bis(2-Chloroethyl)ether	10			-	-	-	-	130 J	-	-	-
2-Chlorophenol	10			-	-	-	-	-	-	-	-
1,3-Dichlorobenzene	10			-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	10			-	-	-	-	-	-	-	-
Benzyl Alcohol	10			-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	10			-	-	-	-	-	-	-	-
2-Methylphenol	10			-	-	-	-	-	-	-	-
bis(2-Chloroisopropyl)ether	10			-	-	-	-	-	-	-	-
4-Methylphenol	10			-	-	-	-	-	-	-	-
N-Nitroso-di-n-propylamine	10			-	-	-	-	-	-	-	-
Hexachloroethane	10			-	-	-	-	-	-	-	-
Nitrobenzene	10			-	-	-	-	-	-	-	-
Isophorone	10			-	-	-	-	-	-	-	-
2-Nitrophenol	10			-	-	-	-	-	-	-	-
2,4-Dimethylphenol	10			-	-	-	-	-	-	-	-
Benzoic Acid	50			-	-	-	-	-	-	-	-
bis(2-Chloroethoxy)methane	10			-	-	-	-	-	-	-	-
2,4-Dichlorophenol	10			-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	10			-	-	-	-	-	-	-	-
Naphthalene	10			-	-	-	-	-	-	-	-
4-Chloroaniline	10			-	-	-	-	-	-	-	-
Hexachlorobutadiene	10			-	-	-	-	-	-	-	-
4-Chloro-3-Methylphenol	10			-	-	-	-	42 J	-	-	-
2-Methylnaphthalene	10			-	-	-	-	-	-	-	-
Hexachlorocyclopentadiene	10			-	-	-	-	-	-	-	-
2,4,6-Trichlorophenol	10			-	-	-	-	-	-	-	-
2,4,5-Trichlorophenol	50			-	-	-	-	-	-	-	-
2-Chloronaphthalene	10			-	-	-	-	-	-	-	-
2-Nitroaniline	50			-	-	-	-	-	-	-	-
Dimethylphthalate	10			-	-	-	-	-	-	-	-
Acenaphthylene	10			-	-	-	-	-	-	-	-
2,6-Dinitrotoluene	10			-	-	-	-	-	-	-	-

Site: Fire Training Area
#: Level D Validation

Summary Table

LOCATION: MW-02-037 MW-02-038 MW-02-040 MW-02-041 MW-02-042 MW-02-043 MW-02-044
 ISIS ID: 02MW03700006XX 02MW03800006XX 02MW04000006XX 02MW04100006XX 02MW04200006XX 02MW04300006XX 02MW04400006XX
 LAB NUMBER: 61128 # 61129 # 61598 # 61956 # 61957 # 61957 # 61130 #
 DATE SAMPLED: 09/10/91 09/10/91 09/12/91 09/17/91 09/12/91 09/17/91 09/10/91
 DATE EXTRACTED: 09/15/91 09/15/91 09/16/91 09/23/91 09/16/91 09/23/91 09/15/91
 DATE ANALYZED: 10/04/91 10/01/91 10/21/91 10/21/91 10/24/91 10/21/91 10/04/91

ANALYTE	SOW-02/88	CRUL	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
3-Nitroaniline	50	-	-	-	-	-	-	-	-	-	-	-
Acenaphthene	10	-	-	-	-	-	-	-	-	-	-	-
2,4-Dinitrophenol	50	-	-	-	-	-	-	-	-	-	-	-
4-Nitrophenol	50	-	-	-	-	-	-	-	-	-	-	-
Dibenzofuran	10	-	-	-	-	-	-	-	-	-	-	-
2,4-Dinitrotoluene	10	-	-	-	-	-	-	-	-	-	-	-
Diethylphthalate	10	-	-	-	-	-	-	-	-	-	-	-
4-Chlorophenyl-phenylether	10	-	-	-	-	-	-	-	-	-	-	-
Fluorene	10	-	-	-	-	-	-	-	-	-	-	-
4-Nitroaniline	50	-	-	-	-	-	-	-	-	-	-	-
4,6-Dinitro-2-methylphenol	50	-	-	-	-	-	-	-	-	-	-	-
N-Nitrosodiphenylamine	10	-	-	-	-	-	-	-	-	-	-	-
4-Bromophenyl-phenylether	10	-	-	-	-	-	-	-	-	-	-	-
Hexachlorobenzene	10	-	-	-	-	-	-	-	-	-	-	-
Pentachlorophenol	50	-	-	-	-	-	-	-	-	-	-	-
Phenanthrene	10	-	-	-	-	-	-	-	-	-	-	-
Anthracene	10	-	-	-	-	-	-	-	-	-	-	-
Di-n-butylphthalate	10	-	-	-	-	-	-	-	-	-	-	-
Fluoranthene	10	-	-	-	-	-	-	-	-	-	-	-
Pyrene	10	-	-	-	-	-	-	-	-	-	-	-
Butylbenzylphthalate	10	-	-	-	-	-	-	-	-	-	-	-
3,3'-Dichlorobenzidine	20	-	-	-	-	-	-	-	-	-	-	-
Benzo(a)Anthracene	10	-	-	-	-	-	-	-	-	-	-	-
Chrysene	10	-	-	-	-	-	-	-	-	-	-	-
bis(2-Ethylhexyl)phthalate	10	-	-	-	-	-	-	-	-	-	-	-
Di-n-octylphthalate	10	-	-	-	-	-	-	-	-	-	-	-
Benzo(b)fluoranthene	10	-	-	-	-	-	-	-	-	-	-	-
Benzo(k)fluoranthene	10	-	-	-	-	-	-	-	-	-	-	-
Benzo(a)Pyrene	10	-	-	-	-	-	-	-	-	-	-	-
Indeno(1,2,3-c,d)Pyrene	10	-	-	-	-	-	-	-	-	-	-	-
Dibenz(a,h)Anthracene	10	-	-	-	-	-	-	-	-	-	-	-
Benzo(g,h,i)perylene	10	-	-	-	-	-	-	-	-	-	-	-

Dilution Factor:

Associated Method Blank: W5085 P1118 P1254 P1118 P1254 P1254 P1254 W5085
 Associated Equipment Blank: 00Q00100006XX 00Q00200006XX 00Q00200006XX 00Q00200006XX 00Q00200006XX 00Q00200006XX 00Q00200006XX
 Associated Field Blank: QD00100006XX QD00100006XX QD00100006XX QD00100006XX QD00100006XX QD00100006XX QD00100006XX

Site: Fire Training Area
 #: Level D Validation

PROJECT: Plattsburgh A.F.B. - Fall of 1991

Semivolatile Organic Aqueous Analysis (ug/L)

Summary Table

ANALYTE	SON-02/88	CRQL	LOCATION:	MW-02-045	MW-02-045	MW-02-046	MW-02-047	MW-02-048	MW-02-048	MW-02-049	MW-04-001
			ISIS ID:	02MW045000060X	02MW045000060X	02MW046000060X	02MW047000060X	02MW048000060X	02MW048000060X	02MW049000060X	04MW00100006XX
			LAB NUMBER:	61447 #	61446 #	61448 #	62067 #	62418 #	62417 #	61131 #	61958 #
			DATE SAMPLED:	09/11/91	09/11/91	09/11/91	09/18/91	09/20/91	09/20/91	09/10/91	09/17/91
			DATE EXTRACTED:	09/16/91	09/16/91	09/16/91	09/23/91	09/25/91	09/25/91	09/15/91	09/23/91
			DATE ANALYZED:	10/17/91	10/17/91	10/17/91	10/23/91	10/24/91	10/28/91	10/09/91	10/21/91
Phenol	10			-	-	-	-	-	-	-	-
Bis(2-Chloroethyl)ether	10			-	-	-	-	-	-	-	-
2-Chlorophenol	10			-	-	-	-	-	-	-	-
1,3-Dichlorobenzene	10			-	-	-	-	-	-	-	-
1,4-Dichlorobenzene	10			-	-	-	-	-	-	-	-
Benzyl Alcohol	10			-	-	-	-	-	-	-	-
1,2-Dichlorobenzene	10			-	-	-	-	-	-	-	-
2-Methylphenol	10			-	-	-	-	-	-	-	-
Bis(2-Chloroisopropyl)ether	10			-	-	-	-	-	-	-	-
4-Methylphenol	10			-	-	-	-	-	-	-	-
N-Nitroso-di-n-propylamine	10			-	-	-	-	-	-	-	-
Hexachloroethane	10			-	-	-	-	-	-	-	-
Nitrobenzene	10			-	-	-	-	-	-	-	-
Isophorone	10			-	-	-	-	-	-	-	-
2-Nitrophenol	10			-	-	-	-	-	-	-	-
2,4-Dimethylphenol	10			-	-	-	-	-	-	-	-
Benzoic Acid	50			-	-	-	-	-	-	-	-
Bis(2-Chloroethoxy)methane	10			-	-	-	-	-	-	-	-
2,4-Dichlorophenol	10			-	-	-	-	-	-	-	-
1,2,4-Trichlorobenzene	10			-	-	-	-	-	-	-	-
Naphthalene	10			-	-	-	-	-	-	-	-
4-Chloroaniline	10			-	-	-	-	-	-	-	-
Hexachlorobutadiene	10			-	-	-	-	-	-	-	-
4-Chloro-3-Methylphenol	10			-	-	-	-	-	-	-	-
2-Methylnaphthalene	10			-	-	-	-	-	-	-	-
Hexachlorocyclopentadiene	10			-	-	-	-	-	-	-	-
2,4,6-Trichlorophenol	10			-	-	-	-	-	-	-	-
2,4,5-Trichlorophenol	50			-	-	-	-	-	-	-	-
2-Chloronaphthalene	10			-	-	-	-	-	-	-	-
2-Nitroaniline	50			-	-	-	-	-	-	-	-
Dimethylphthalate	10			-	-	-	-	-	-	-	-
Acenaphthylene	10			-	-	-	-	-	-	-	-
2,6-Dinitrotoluene	10			-	-	-	-	-	-	-	-

Site: Fire Training Area
#: Level D Validation

Summary Table

LOCATION: MW-02-045 02MW045000060X MW-02-045 61446 # 09/11/91 10/17/91
 ISIS ID: 02MW045000060X 02MW045000060X 02MW045000060X 02MW045000060X
 LAB NUMBER: 61447 # 09/11/91 10/17/91
 DATE SAMPLED: 09/11/91 10/17/91
 DATE EXTRACTED: 09/16/91 10/17/91
 DATE ANALYZED: 10/17/91 10/17/91

ANALYTE	SOW-02/88	CRQL	MW-02-045 02MW045000060X 61446 # 09/11/91 10/17/91	MW-02-046 02MW046000060X 61448 # 09/11/91 10/17/91	MW-02-047 02MW047000060X 62067 # 09/18/91 10/23/91	MW-02-048 02MW048000060X 62418 # 09/25/91 10/24/91	MW-02-048 02MW048000060X 62417 # 09/20/91 09/25/91 10/28/91	MW-02-049 02MW049000060X 61131 # 09/10/91 09/15/91 10/09/91	MW-04-001 04MW001000060X 61958 # 09/17/91 09/23/91 10/21/91
3-Nitroaniline	50	-	-	-	-	-	-	-	-
Acenaphthene	10	-	-	-	-	-	-	-	-
2,4-Dinitrophenol	50	-	-	-	-	-	-	-	-
4-Nitrophenol	50	-	-	-	-	-	-	-	-
Dibenzofuran	10	-	-	-	-	-	-	-	-
2,4-Dinitrotoluene	10	-	-	-	-	-	-	-	-
Diethylphthalate	10	-	-	-	-	-	-	-	-
4-Chlorophenyl-phenylether	10	-	-	-	-	-	-	-	-
Fluorene	10	-	-	-	-	-	-	-	-
4-Nitroaniline	50	-	-	-	-	-	-	-	-
4,6-Dinitro-2-methylphenol	50	-	-	-	-	-	-	-	-
N-Nitrosodiphenylamine	10	-	-	-	-	-	-	-	-
4-Bromophenyl-phenylether	10	-	-	-	-	-	-	-	-
Hexachlorobenzene	10	-	-	-	-	-	-	-	-
Pentachlorophenol	50	-	-	-	-	-	-	-	-
Phenanthrene	10	-	-	-	-	-	-	-	-
Anthracene	10	-	-	-	-	-	-	-	-
Di-n-butylphthalate	10	-	-	-	-	-	-	-	-
Fluoranthene	10	-	-	-	-	-	-	-	-
Pyrene	10	-	-	-	-	-	-	-	-
Butylbenzylphthalate	10	-	-	-	-	-	-	-	-
3,3'-Dichlorobenzidine	20	-	-	-	-	-	-	-	-
Benzo(a)Anthracene	10	-	-	-	-	-	-	-	-
Chrysene	10	-	-	-	-	-	-	-	-
bis(2-Ethylhexyl)phthalate	10	-	-	-	-	-	-	-	-
Di-n-octylphthalate	10	-	-	-	-	-	-	-	-
Benzo(b)Fluoranthene	10	-	-	-	-	-	-	-	-
Benzo(k)Fluoranthene	10	-	-	-	-	-	-	-	-
Benzo(a)Pyrene	10	-	-	-	-	-	-	-	-
Indeno(1,2,3-c,d)Pyrene	10	-	-	-	-	-	-	-	-
DiBenz(a,h)Anthracene	10	-	-	-	-	-	-	-	-
Benzo(g,h,i)perylene	10	-	-	-	-	-	-	-	-

Dilution Factor:

Associated Method Blank: P1118 00QS002000060X 00QS002000060X 00QS002000060X 00QS002000060X 00QS002000060X 00QS002000060X 00QS002000060X 00QS002000060X 00QS002000060X
 Associated Equipment Blank: P1118 00QS002000060X 00QS002000060X 00QS002000060X 00QS002000060X 00QS002000060X 00QS002000060X 00QS002000060X 00QS002000060X 00QS002000060X
 Associated Field Blank: P1118 00QS002000060X 00QS002000060X 00QS002000060X 00QS002000060X 00QS002000060X 00QS002000060X 00QS002000060X 00QS002000060X 00QS002000060X

Site: Fire Training Area
 #: Level D Validation

PROJECT: Plattsburgh A.F.B. - Fall of 1991

Semivolatitle Organic Aqueous Analysis (ug/L)

Summary Table

LOCATION:		MW-04-004	MW-04-005	MW-04-006	MW-13-002	MW-16-001
ISIS ID:		04MW00400006XX	04MW00500006XX	04MW00600006XX	13MW00200006XX	16MW00100006XX
LAB NUMBER:		61959 #	61595 #	61960 #	62069 #	61594 #
DATE SAMPLED:		09/17/91	09/12/91	09/17/91	09/18/91	09/12/91
DATE EXTRACTED:		09/23/91	09/16/91	10/09/91	09/23/91	09/16/91
DATE ANALYZED:		10/23/91	10/17/91	10/23/91	10/25/91	10/17/91
ANALYTE	SOW-02/88	CRQL				
Phenol		10	-	-	-	-
bis(2-Chloroethyl) ether		10	-	-	-	-
2-Chlorophenol		10	-	-	-	-
1,3-Dichlorobenzene		10	-	-	-	-
1,4-Dichlorobenzene		10	-	-	-	-
Benzyl Alcohol		10	-	-	-	-
1,2-Dichlorobenzene		10	-	-	-	-
2-Methylphenol		10	-	-	-	-
bis(2-Chloroisopropyl) ether		10	-	-	-	-
4-Methylphenol		10	-	-	-	-
N-Nitroso-di-n-propylamine		10	-	-	-	-
Hexachloroethane		10	-	-	-	-
Nitrobenzene		10	-	-	-	-
Isophorone		10	-	-	-	-
2-Nitrophenol		10	-	-	-	-
2,4-Dimethylphenol		10	-	-	-	-
Benzoic Acid		50	-	-	-	-
bis(2-Chloroethoxy)methane		10	-	-	-	-
2,4-Dichlorophenol		10	-	-	-	-
1,2,4-Trichlorobenzene		10	-	-	-	-
Naphthalene		10	-	-	-	-
4-Chloroaniline		10	-	-	-	-
Hexachlorobutadiene		10	-	-	-	-
4-Chloro-3-Methylphenol		10	-	-	-	-
2-Methylnaphthalene		10	-	-	-	-
Hexachlorocyclopentadiene		10	-	-	-	-
2,4,6-Trichlorophenol		10	-	-	-	-
2,4,5-Trichlorophenol		50	-	-	-	-
2-Chloronaphthalene		10	-	-	-	-
2-Nitroaniline		50	-	-	-	-
Dimethylphthalate		10	-	-	-	-
Acenaphthylene		10	-	-	-	-
2,6-Dinitrotoluene		10	-	-	-	-

Site: Fire Training Area
#: Level D Validation

Summary Table

LOCATION:	MW-04-004	MW-04-005	MW-04-006	MW-13-002	MW-16-001
ISIS ID:	04MW00400006XX	04MW00500006XX	04MW00600006XX	13MW00200006XX	16MW00100006XX
LAB NUMBER:	61959 #	61595 #	61960 #	62069 #	61594 #
DATE SAMPLED:	09/17/91	09/12/91	09/17/91	09/18/91	09/12/91
DATE EXTRACTED:	09/23/91	09/16/91	10/09/91	09/23/91	09/16/91
DATE ANALYZED:	10/23/91	10/17/91	10/23/91	10/25/91	10/17/91

ANALYTE	SOW-02/88	CROL																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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Site: Fire Training Area
#: Level D Validation

Inorganic Aqueous Analysis (ug/L)

Summary Table

LOCATION:	MW-02-001	MW-02-003	MW-02-003	MW-02-004	MW-02-004	MW-02-005	MW-02-005
ISIS ID:	02MW00100006XX	02MW00300006XX	02MW00300006XX	02MW00400006XX	02MW00400006XX	02MW00500006XX	02MW00500006XX
LAB NUMBER:	62434 #	62435 # F	62494 # F	62142 # F	62150 #	62143 # F	62151 #
DATE SAMPLED:	09/20/91	09/21/91	09/21/91	09/19/91	09/19/91	09/19/91	09/19/91

ANALYTE	SQM-07/88	CRQL
Aluminum	3610	200
Antimony	-	60
Arsenic	-	10
Barium	-	200
Beryllium	-	5
Cadmium	-	5
Calcium	44000	5000
Chromium	47200	10
Cobalt	-	50
Copper	-	25
Iron	5730	100
Lead	-	3
Magnesium	15000	5000
Manganese	16900	15
Mercury	110	0.2
Nickel	-	40
Potassium	-	5000
Selenium	-	5
Silver	-	10
Sodium	-	5000
Thallium	-	10
Vanadium	-	50
Zinc	-	20
Cyanide	-	10

Associated Method Blank:
Associated Equipment Blank:
Associated Field Blank:

[illegible]

Site: Fire Training Area
#: Level D Validation
F: Filtered Sample

Site: Fire Training Area
#: Level D Validation
F: Filtered Sample

Inorganic Aqueous Analysis (ug/L)

F.B. - Fall of 1991

Inorganic Aqueous Analysis (ug/L)

	PBW33	PBW33	PBW33	PBW33	PBW33	PBW33	PBW33
Associated Method Blank:	00Q500500006XX	00Q500500006XX	00Q500500006XX	00Q500500006XX	00Q500500006XX	00Q500500006XX	00Q500500006XX
Associated Equipment Blank:	-	-	-	-	-	-	-
Associated Field Blank:	-	-	-	-	-	-	-

Site: Fire Training Area
#: Level D Validation
F: Filtered Sample

Site: Fire Training Area
#: Level D Validation
F: Filtered Sample

Inorganic Aqueous Analysis (ug/L)

LOCATION:	MW-02-024	MW-02-024	MW-02-024	MW-02-026	MW-02-026	MW-02-026	MW-02-027	MW-02-027	MW-02-028	MW-02-028
ISIS ID:	02MW02400006XX	02MW02400006XX	02MW02400006XX	02MW026000006XX	02MW026000006XX	02MW026000006XX	02MW027000006XX	02MW027000006XX	02MW028000006XX	02MW028000006XX
LAB NUMBER:	62149 # F	62158 #	62158 #	62432 #	62443 # F	62443 # F	62442 # F	62442 # F	62147 # F	62156 #
DATE SAMPLED:	09/19/91	09/19/91	09/19/91	09/20/91	09/20/91	09/20/91	09/20/91	09/20/91	09/19/91	09/19/91

ANALYTE	SOW-07/88	CRQL
Aluminum	200	-
Antimony	60	-
Arsenic	10	-
Barium	200	-
Beryllium	5	-
Cadmium	5	-
Calcium	5000	-
Chromium	10	-
Cobalt	50	-
Copper	25	-
Iron	100	-
Lead	3	-
Magnesium	5000	-
Manganese	15	-
Mercury	0.2	-
Nickel	40	-
Potassium	5000	-
Selenium	5	-
Silver	10	-
Sodium	5000	-
Thallium	10	-
Tenadium	50	-
Zinc	20	-
Cyanide	10	-

Associated Method Blank:
PBWJ32
00QSO0400006XX
00QSO00400006XX
00QD00200006XX

Associated Equipment Blank:
PBWJ32
00QSO0400006XX
00QSO00400006XX
00QD00200006XX

Associated Field Blank:
PBWJ32
00QSO0400006XX
00QSO00400006XX
00QD00200006XX

Site: Fire Training Area
#: Level D Validation
F: Filtered Sample

Site: Fire Training Area
#: Level D Validation
F: Filtered Sample

Inorganic Aqueous Analysis (ug/L)

Summary Table

LOCATION:	MW-02-038	MW-02-039	MW-02-040	MW-02-041	MW-02-041
TSIS ID:	02MW03800006XX	02MW03900006XX	02MW04000006XX	02MW04100006XX	02MW04100006XX
LAB NUMBER:	61137 # F	61961 #	61603 # F	61963 #	61970 # F
DATE SAMPLED:	09/10/91	09/17/91	09/12/91	09/17/91	09/17/91

ANALYTE	SOW-07/88	CRQL
Aluminum	200	-
Antimony	60	-
Arsenic	10	-
Barium	200	-
Beryllium	5	-
Cadmium	5	-
Calcium	77000	55000
Chromium	10	-
Cobalt	50	-
Copper	25	-
Iron	819	-
Lead	3	-
Magnesium	5000	21500
Manganese	15	74.1
Mercury	0.2	21600
Nickel	40	76.6
Potassium	5000	-
Selenium	5	-
Silver	10	-
Sodium	5000	-
Thallium	10	-
Vanadium	50	-
Zinc	20	-
Cyanide	10	-

Associated Method Blank:	PBLK26, 27	PBW30	PBLK28, 29	PBW30	PBLK28, 29	PBW30
Associated Equipment Blank:	-	-	-	-	00qS00200006XX	-
Associated Field Blank:	00q000100006XX	-	00qD00200006XX	00qD00200006XX	00qD00100006XX	00qD00200006XX

Site: Fire Training Area
#: Level D Validation
F: Filtered Sample

LOCATION:	MW-02-041	MW-02-042	MW-02-043	MW-02-044	MW-02-044
ISIS ID:	02MW04100006XX	02MW04200006XX	02MW04300006XX	02MW04400006XX	02MW04400006XX
LAB NUMBER:	61969 # F	61602 # F	61971 # F	61134 #	61138 # F
DATE SAMPLED:	09/17/91	09/12/91	09/17/91	09/10/91	09/10/91

ANALYTE	SOW-07/88	CRQL
Aluminum	200	-
Antimony	60	-
Arsenic	10	-
Barium	200	-
Beryllium	5	-
Cadmium	5	-
Calcium	91100	92000
Chromium	5000	39100
Cobalt	10	42000
Copper	50	-
Iron	25	-
Lead	100	584
Magnesium	3	199
Manganese	5000	8.2
Mercury	15	28000
Nickel	0.2	297
Potassium	40	-
Selenium	5000	-
Silver	5	-
Sodium	10	-
Thallium	5000	8450
Vanadium	10	-
Zinc	50	-
Cyanide	20	-
	10	-

PBW30	PBLK28, 29	PBW30	PBLK28, 29	PBW30	PBLK26, 27	PBLK26, 27
-	00qS0200006XX	-	00qS0200006XX	-	-	-
00qD002000006XX	-	00qD002000006XX	00qD001000006XX	00qD002000006XX	00qD001000006XX	-

Site: Fire Training Area
#: Level D Validation
F: Filtered Sample

Inorganic Aqueous Analysis (ug/L)

Summary Table

LOCATION:	MW-02-045	MW-02-045	MW-02-045	MW-02-045	MW-02-046	MW-02-046	MW-02-047	MW-02-047
TSIS ID:	02MW045000060X	02MW045000060X	02MW04500006XX	02MW04500006XX	02MW04600006XX	02MW04600006XX	02MW04700006XX	02MW04700006XX
LAB NUMBER:	61451 #	61516 # F	61450 #	61515 # F	61452 #	61517 # F	62087 #	62087 #
DATE SAMPLED:	09/11/91	09/11/91	09/11/91	09/11/91	09/11/91	09/11/91	09/18/91	09/18/91

ANALYTE	SOW-07/88	CRQL
Aluminum	-	200
Antimony	-	60
Arsenic	-	10
Barium	-	200
Beryllium	-	5
Cadmium	-	5
Calcium	76100	5000
Chromium	75.3 J	10
Cobalt	-	50
Copper	-	25
Iron	5020	100
Lead	-	3
Magnesium	25100	5000
Manganese	739	15
Mercury	40.3	0.2
Nickel	-	40
Potassium	-	5000
Selenium	-	5
Silver	-	10
Sodium	-	5000
Thallium	-	10
Vanadium	-	50
Zinc	-	20
Cyanide	-	10

	PBLK26, 27	PBLK26, 27	PBLK26, 27	PBLK26, 27	PBLK26, 27	P85530W	P85530W
Associated Method Blank:	00QSO0100006XX	00QSO0100006XX	00QSO0100006XX	00QSO0100006XX	00QSO0100006XX	00QSO0300006XX	00QSO0300006XX
Associated Equipment Blank:	00QSO0100006XX	00QSO0100006XX	00QSO0100006XX	00QSO0100006XX	00QSO0100006XX	-	-
Associated Field Blank:	00QSO0100006XX	00QSO0100006XX	00QSO0100006XX	00QSO0100006XX	00QSO0100006XX	-	-

Site: Fire Training Area
#: Level D Validation
F: Filtered Sample

LOCATION:	MW-02-048	MW-02-048	MW-02-048	MW-02-048	MW-02-049	MW-02-049	MW-04-001
ISLS ID:	02MW048000060X	02MW048000060X	02MW04800006XX	02MW04800006XX	02MW04900006XX	02MW04900006XX	04MW00100006XX
LAB NUMBER:	62429 #	62440 # F	62428 #	62439 # F	61135 #	61139 # F	61955 #
DATE SAMPLED:	09/20/91	09/20/91	09/20/91	09/20/91	09/10/91	09/10/91	09/17/91

	PBW33	PBW33	PBW33	PBW33	PBW30	PBW30
Associated Method Blank:						
Associated Equipment Blank:	00qS00500006XX	00qS00500006XX	00qS00500006XX	00qS00100006XX	-	PBW30
Associated Field Blank:	-	-	-	00qD00100006XX	-	00qD00200006XX

Site: Fire Training Area
#: Level D Validation
F: Filtered Sample

Summary Table

LOCATION: MW-16-001 MW-16-001
 ISIS ID: 16MW00100006XX 16MW00100006XX
 LAB NUMBER: 61599 # F 61604 #
 DATE SAMPLED: 09/12/91 09/12/91

ANALYTE	SOW-07/88	CRQL
Aluminum	200	-
Antimony	60	-
Arsenic	10	-
Barium	200	-
Beryllium	5	-
Cadmium	5	-
Calcium	5000	131000
Chromium	10	-
Cobalt	50	-
Copper	25	-
Iron	100	678
Lead	3	-
Magnesium	5000	21000
Manganese	15	3230
Mercury	0.2	-
Nickel	40	-
Potassium	5000	6090
Selenium	5	-
Silver	10	-
Sodium	5000	-
Thallium	10	-
Vanadium	50	-
Zinc	20	-
Cyanide	10	-

Associated Method Blank: PBLK28,29 PBLK28,29
 Associated Equipment Blank: 00QS00200006XX 00QS00200006XX
 Associated Field Blank: - 00QD00100006XX

Site: Fire Training Area
 #: Level D Validation
 F: Filtered Sample

**PHASE I REMEDIAL INVESTIGATION
SURFACE WATER/SEDIMENT**